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Journal of the Society of Arts.

FRIDAY, FEBRUARY 22, 1861.

INTERNATIONAL EXHIBITION OF
1862.

The following is a copy of the Charter which Her Majesty has been graciously pleased to grant, incorporating Earl Granville, K.G., the Marquis of Chandos, Mr. Thomas Baring, M.P., Mr. C. Wentworth Dilke, and Mr. Thomas Fairbairn, as the Commissioners for the Exhibition of 1862:—

VICTORIA, by the grace of God of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, to all to whom these presents shall come, greeting: Whereas, the Society for the Encouragement of Arts, Manufactures, and Commerce, incorporated by Charter under Our Great Seal, bearing date at Westminster the 10th day of June in the tenth year of Our reign, and whereof Our most dearly beloved Consort is President (and which Society is hereinafter referred to as the Society of Arts), did previously to the year 1851 establish and cause to be held from time to time exhibitions of the products of industry and art, which exhibitions resulted in, or conduced to, the holding of the Exhibition of the Works of Industry of all Nations, in the year 1851, and which last-named Exhibition was attended with great success and public advantage: And whereas the said Society, in order to promote the objects for which it was incorporated, is desirous that facilities should be afforded for holding from time to time International Exhibitions of the products of Industry and Art, and it hath been represented to Us by the said Society that many of its members and others of Our loving subjects, are desirous that such an International Exhibition should be holden in the Metropolis in the year 1862, or so soon after as conveniently may be, and the said Society is desirous that the entire control and management of such Exhibition shall be confided to the Right Honourable Granville George Earl Granville, Lord President of Our Council, and Knight of Our most noble Order of the Garter, the Right Honourable Richard Plantaganet Campbell Temple Nugent Brydges Chandos Grenville, commonly called Marquis of Chandos, Thomas Baring, Esq., M.P., Charles Wentworth Dilke the younger, Esq., and Thomas Fairbairn, Esq., who are willing to undertake the duty of conducting such Exhibition, provided that the holding thereof be approved by us, and that we should be willing to grant to them our Charter of Incorporation, to enable them to

conduct and manage the same: And whereas, it hath also been represented to Us that it is essential to the success of such undertaking that We give Our sanction thereto, in order that it may have the confidence not only of all classes of Our subjects, but of the subjects of foreign countries, and for such objects, as well as for other the purposes herein appearing, the said Society hath besought Us to authorise the said Earl Granville, the Marquis of Chandos, Thomas Baring, Charles Wentworth Dilke, and Thomas Fairbairn to carry into effect such undertaking, and to grant to them Our Charter of Incorporation: And whereas it hath been further represented to Us that with a view to the arrangements for the said Exhibition, it will be necessary for the Corporation to be hereby created forthwith to borrow sums not exceeding in the whole £250,000, and that the Governor and Company of the Bank of England or other persons will be willing to advance that sum on having the repayment thereof secured by the covenant of the Corporation, to be hereby created, and by the covenant of a sufficient number of other persons: And whereas it hath been further represented to Us, that with a view of forwarding the undertaking many of Our loving subjects are willing to enter into proper covenants to effect such purpose, the covenants to be so framed as in the event of any payment being made thereunder as far as practicable to subject the covenantors to bear such payment rateably according to the amounts by them subscribed, but not exceeding in each case the amount of the subscription: And it hath also been represented to Us that it is essential to the well conducting of the affairs connected with the undertaking, and with the view of preventing disputes and litigation hereafter in reference thereto, that the general nature of the undertaking as sanctioned and approved by Us, and of the duties, rights, and powers of the persons conducting the same, shall, so far as conveniently may be, be defined, and shall be notified to all whom it may concern, by means of such Charter: And whereas it is further represented to Us, that under arrangements made between the said Society and the Commissioners for the Exhibition of 1851, incorporated by Our Royal Charter bearing date the 15th day of August, in the 14th year of Our reign, and continued and endowed with further powers by Our Royal Charter, bearing date the 2nd day of December, in the 15th year of Our reign, those Commissioners have agreed to grant, rent free, the use of a certain site for the said Exhibition of 1862, subject to certain regulations relating to the approval by them of the buildings to be erected thereon, and with a provision that, in case the persons having the conduct of that Exhibition should, before the 31st day of December, 1862, give notice of the desire of the said Society to retain

certain permanent buildings intended to be erected for the Exhibition of 1862, the Commissioners for the Exhibition of 1851 would grant to the said Society a lease of the site to an extent not exceeding one acre, whereon those permanent buildings should be erected, with a view, amongst other things, to assist the holding of future Exhibitions; and in case the same persons shall, out of the profits of the undertaking, pay to the same Commissioners a sum of £10,000, those Commissioners have agreed to reserve (subject to certain conditions) a certain site for an Exhibition to be held in the year 1872. Now know ye, that We, being earnestly desirous to promote the holding of an International Exhibition of Industry and Art in the year 1862, do, by these presents, for Us, Our heirs and successors, give, grant, and ordain that the said Earl Granville, the Marquis of Chandos, Thomas Baring, Charles Wentworth Dilke, and Thomas Fairbairn, and the survivors and survivor of them, and such other persons, if any, as shall be appointed, in manner hereinafter provided, to be Commissioners, in lieu of them or any of them, shall be one body politic and corporate, by the name of "The Commissioners for the Exhibition of 1862," and by that name shall and may sue and be sued, implead and be impleaded, and shall have perpetual succession and a common seal, with full power to alter, vary, break, or renew the same at their discretion: And We will and ordain that the Corporation hereby incorporated, hereinafter referred to as "Our Commissioners," is incorporated for the purpose of conducting and managing an International Exhibition of the Products of Industry and Art of all Nations, such Exhibition to be held in or near the metropolis in the year 1862, or within such further time as is hereinafter provided in that behalf; and We will and ordain that Our Commissioners shall have the entire conduct, control, and management of the said Exhibition, and of the funds that may arise from that undertaking, and that such Exhibition may be carried on either in accordance with the precedent afforded by the Exhibition of 1851, or in such other mode or manner as Our Commissioners shall in their discretion think fit, but subject to such special directions as are hereinafter contained. And We will and ordain that Our Commissioners shall have power to borrow and take up at interest, for the purposes of the said undertaking, such sum or sums of money as they may think fit, and may from time to time, for such purpose, mortgage or pledge the funds or other property of the said Corporation, and may, under their common seal, execute any deed or deeds of covenant or other deed or deeds for securing repayment of any sum or sums so to be borrowed, with interest, and may also procure any persons willing to guarantee the repayment of any such

sum or sums or any part thereof, to execute a deed of covenant for payment of such sums as the covenantors may be willing to become liable for, so as to guarantee the due repayment of any sum or sums which may be so borrowed with interest, and all costs, charges, and expenses caused by the non-payment thereof, and that the said deed or deeds of covenant shall contain all necessary and proper provisions, and in particular provisions to insure, as far as practicable, that none of the covenantors shall ultimately bear more than his fair and proper proportion of the sums which they may respectively covenant to pay, and the several persons who shall make and enter into such covenants are hereinafter referred to as the guarantors, and the sum or sums of money which shall be so borrowed and secured to be paid are hereinafter referred to as "The Guaranteed Debt of the Corporation." And We will and ordain that each of the several persons hereby incorporated and any person who may as hereinafter provided be appointed in the place of any of them, may execute the said deed of guarantee in his own individual capacity for such sum as he may think fit. And We do hereby direct and authorize our Commissioners to make and enter into such arrangements as they and the Commissioners for the Exhibition of 1851 may mutually agree upon, for holding the Exhibition on a portion of the estate of those Commissioners at Kensington Gore, in accordance with the arrangements already made with them by the Society of Arts, or which may hereafter be made by Our Commissioners with the Commissioners for the Exhibition of 1851, so as such other or further arrangements shall not, without the approval of the Society, be inconsistent with the arrangements already made between the Society and those Commissioners; or they may choose and contract for the occupation of any other site for holding the intended exhibition, provided such site be situate within ten miles from St. Paul's Cathedral, in the City of London, measured in a direct line. And We will and direct that in case the Exhibition shall be held on any part of the lands of the Commissioners for the Exhibition of 1851, then that Our Commissioners shall cause a sum not exceeding £50,000, to be expended on buildings of a permanent character, and such as may be adapted for the purposes for which the Society of Arts may require to have a lease of the site of such buildings, under the arrangements now made or contemplated between them and the Commissioners for the Exhibition of 1851, and which buildings are hereinafter referred to as "The Permanent Buildings." And We will and ordain that our Commissioners may contract for, erect, and, subject to such special direc-

tions as are herein contained, may remove, or may leave standing at the close of such Exhibition, any building or buildings erected for the same in accordance with such arrangements as have been or shall be lawfully made in that behalf; and may, if they think fit, distribute prizes to exhibitors and may do all matters and things connected with such distribution; and shall have full power to receive and take such sums of money as they may direct, for entrance to the Exhibition, or for the rent of any part of the buildings to be erected or otherwise relating to the premises, and to dispose of all moneys which shall come to their hands as they shall think fit, for and towards the purposes of the said Exhibition or otherwise, in the execution of the powers hereby given to them, including the payment of all expenses, charges, and liabilities which they may incur or become subject to; and that they shall have full power to give effectual discharges to any persons paying any moneys to them, and to settle and adjust any accounts relating thereto; and generally to do all matters and things that may be necessary, or may appear to them to be expedient, for promoting the ends and designs of the said Exhibition. And We do hereby ordain, that it shall be lawful for Our Commissioners, and they shall have full power and authority, from time to time to depute or choose any persons, and to give to them all or any of the powers and authorities hereby given to Our Commissioners as they shall think fit, for managing and conducting all or any of the matters and things hereby authorised to be done by Our Commissioners, and which may be necessary for conducting or in any manner relate to or concern the said Exhibition. And We do hereby ordain that it shall be lawful for Our Commissioners from time to time to appoint one or more secretaries and such other officers as they may think fit, and to remove all persons appointed by them and to appoint others or not as they see fit. And we do hereby ordain that our Commissioners may elect one member of their corporation to be the chairman thereof, and from time to time may vary such chairman as they think fit; and also that our Commissioners may elect such other person or persons as they may think fit to be Commissioners in lieu of any one or more of them who may die or desire to be discharged from or become incapable to act in the execution of the office of Commissioner before the duties of such office shall be fully performed. And we will and ordain that such appointment of a Commissioner or Commissioners shall be made by a resolution to be passed at a meeting specially to be called for that purpose, but no appointment shall be effectual and valid unless and until the person or persons appointed shall be approved by us, such approval to be testified by a minute in writing, to be signed by one of our principal Secretaries

of State, and published in the *London Gazette*. And we order and direct that Our Commissioners shall meet when and at such place or places as, from time to time, they shall direct or determine, and that all and every the powers hereby given to Our Commissioners may be exercised at any meeting of any two or more of the Commissioners and that the decision of the majority attending at any meeting shall be binding, and determine any question proposed; and that when the votes shall be equal the chairman of the corporation for the time being, if present, shall, in addition to his vote as a member, have the casting vote, and that Our Commissioners shall and may, from time to time, make and repeal or alter such rules, orders, regulations, and bye-laws for the management of the business of the undertaking as they may think fit, so as the same be not contrary to the laws of this our realm, and such rules, orders, regulations, and bye-laws shall, when made, and till the same shall be repealed or altered, be as effectual as if they were contained in this our Royal Charter: Provided always; and We will and ordain that in case it shall appear to Our Commissioners, from any cause not now foreseen, expedient to postpone the holding of such Exhibition until some time in the year 1863, it shall be lawful for them, with the consent in writing of any one of our principal Secretaries of State, to do so, by inserting in the *London Gazette*, on or before the 1st day of March, 1862, notice that the said Exhibition is to be so postponed, and in that case they shall and may hold such Exhibition accordingly, in the year 1863; and in case after making any contracts or engagements for the holding of such Exhibition, they shall from like cause see fit to abandon it altogether, they may, with the like consent, so do, giving like notice thereof, upon and subject to their making compensation to persons with whom they may have entered into any contracts in relation to the holding thereof, or incident thereto, which in such case we require and authorise them to make. And We do will and ordain that, so soon as conveniently may be after the closing or abandonment of the Exhibition, Our Commissioners shall sell, dispose of, and convert into money, all property and effects belonging to them which can be so sold and converted, particularly all the buildings erected by them for the purposes of the undertaking, save and except "The Permanent Buildings." And We will and ordain, that immediately after such sale and conversion into money, Our Commissioners shall, out of the monies to arise by such sale and conversion, or of which they shall be otherwise possessed, proceed, after payment of all costs, charges, and expenses incident to the undertaking, to pay and discharge, so far as such monies will extend, in such order and priority as the law may require or Our Commissioners see fit, all their debts and

liabilities, save and except the guaranteed debt of the Corporation; and after payment of all such debts and liabilities, except as aforesaid, and providing and setting apart a reasonable sum for the payment of future expenses incident to the completion of their duties, Our Commissioners shall apply the surplus of such monies, if any, in or towards the payment and satisfaction of the guaranteed debt of the corporation, or in case the guarantors, or any of them, shall have been called upon to pay, and have paid, any monies in respect of the guaranteed debt of the Corporation, then in repaying to them, so far as the monies applicable for such purposes will extend, the amount which the guarantors shall have so paid, in such manner, as far as practicable, as to secure that none of the guarantors shall pay more than his just and fair proportion of the sum which he shall have bound himself to contribute. And We will and ordain that as soon as may be after such sale and conversion as aforesaid, Our Commissioners shall cause a statement of the accounts relating to the undertaking to be made up, and shall submit for examination the vouchers for the receipt and expenditure to the Governor of the Bank of England, the Deputy-Governor of the Bank of England, and the Comptroller-General of the National Debt, or such person or persons as such Governor, Deputy-Governor, and Comptroller-General, or any two of them, shall appoint to make such examination, and shall submit a duplicate of such statement to the Society of Arts for their information; and Our Commissioners shall then proceed to ascertain whether or not (having reference, if necessary, to the value of the permanent buildings, and calculating such value according to the amount such buildings are likely to realise if taken down and the materials sold,) there has been a gain or loss attendant upon the undertaking, and shall forthwith certify, under their common seal, whether there shall have been a gain or loss, and, as near as may be, the estimated amount of such gain or loss, having reference to the value of the permanent buildings, and shall cause their certificate to be forthwith published in the *London Gazette*. And in case, irrespective of the value of the permanent buildings, there shall have been a loss attending the said undertaking, then if the Society of Arts shall, with a view to obtain a lease of the permanent buildings in accordance with such arrangement as hereinbefore in that behalf mentioned, be willing out of their corporate funds to bear and sustain that loss, it shall be incumbent upon Our Commissioners, if so required by the Society of Arts, by notice in writing under the hand of their Secretary, to be delivered within one calendar month from the publication of such certificate, to make and enter into such arrangement with the Society as may secure to them the benefits of such lease,

subject to the Society bearing such loss and undertaking to provide sufficient funds to enable Our Commissioners to pay and satisfy all the remaining debts and liabilities of the said Corporation, including the guaranteed debt of the Corporation, or so much thereof as shall remain unpaid, and the Society undertaking to indemnify the guarantors from all loss and liability in respect thereof, but in default of the said Society serving such notice in due time, or of their duly and effectually performing all acts to carry out such arrangement as provided for by the clause last hereinbefore contained, then our Commissioners shall forthwith or so soon as conveniently may be, sell the permanent buildings, and out of the proceeds thereof, after payment of all cost incident to such sale, or otherwise incident to the undertaking and remaining unpaid shall discharge all debts and liabilities if any attending the undertaking remaining unpaid, except the guaranteed debt of the Corporation, and shall apply the surplus if any in or towards satisfaction of the guaranteed debt of the Corporation, or in case the guarantors, or any of them, shall have been called upon to pay and have paid, any monies in respect of the guaranteed debt of the Corporation, then in repaying to them, so far as the monies applicable for such purposes will extend, the amount which the guarantors shall have so paid, in such manner, as far as practicable, as to secure that none of the guarantors shall pay more than his just and fair proportion of the sum which he shall have bound himself to contribute; and if any surplus shall remain after all such payments, then such surplus shall be disposed of in manner hereinafter directed as to and concerning the ultimate disposable profit of the undertaking in case of there being a gain attending the undertaking. And We will and ordain that in case, after payment of all the debts and liabilities attending the undertaking, it shall be found that, irrespective of the permanent buildings, there shall have been a gain attending the undertaking, then the permanent buildings shall be left standing for the Society of Arts, in accordance with the aforesaid arrangements, and out of such gain, Our Commissioners shall firstly pay to the Commissioners for the Exhibition of 1851, if desired by the Society of Arts, as hereinbefore recited, a sum not exceeding £10,000 as a consideration for their reserving a site containing 16 acres or thereabouts for an Exhibition of the Products of Industry and Art to be held in the year 1872, on the lands belonging to such Commissioners, and shall, secondly, apply in completing the permanent buildings in an architectural manner, and in a manner suitable for the objects for which they are to be employed by the Society of Arts, so much of the unexpended portion of the sum hereinbefore mentioned to be intended to be expended on the permanent buildings, not

exceeding £50,000 as in the judgment of our Commissioners jointly with that of the Commissioners for the Exhibition of 1851 may be requisite for that purpose. And we will and ordain that if there shall remain any surplus of such gain arising from the said undertaking after all the payments hereinbefore provided for such gain shall be considered as the ultimate disposable profit of the undertaking and shall be disposed of as hereinafter in that behalf provided; viz.:—We will and ordain that Our Commissioners shall apply the ultimate disposable profit of the undertaking for such purposes connected with the Encouragement of Arts, Manufactures, and Commerce, as shall be determined by the guarantors at a meeting to be called for the purpose at such time and place, and in such manner by advertisement or otherwise as Our Commissioners shall think fit, and whereof 28 days' notice at the least shall be given at which meeting the question to be determined shall be decided and settled by the votes of guarantors representing the majority in value of the subscriptions of the persons actually present and voting: Provided further that before proceeding to ascertain the amount of each subscription, for the purpose of such decision, it shall be lawful for the Chairman of the meeting to take a show of hands on any question to be submitted to the meeting, and his decision if not objected to as to such show of hands shall be considered conclusive and binding without the actual necessity of ascertaining the exact amount for which each Guarantor shall have signed the agreement. And we will and ordain that the services of our said Commissioners shall be rendered gratuitously: but we direct that Our Commissioners may, out of the corporate funds, allow and pay to their Secretaries and Officers, and other persons who may aid them in the conduct of such Exhibition, such salaries and gratuities or other remuneration as they may think fit; and they may thereout also pay the costs, charges, and expenses incurred, or to be incurred, by the Society of Arts, in promoting the said undertaking, and in getting the requisite instruments made and executed by the guarantors: Provided always, that when and as soon as any sum or sums of money which may have been borrowed by Our said Commissioners under the powers aforesaid, and all interest thereon shall be fully paid, and all other the matters and things entrusted to be done by this Our Charter by the said Commissioners hereby incorporated shall be fully performed, or become incapable of being executed, and when the same shall have been certified under the Corporate Seal to one of our principal Secretaries of State then these presents, and every matter and thing herein contained, shall be absolutely void.

In witness whereof We have caused these our

Letters to be made Patent. Witness Ourselves at Our Palace at Westminster, this Fourteenth day of February, in the Twenty-fourth year of Our reign.

By Her Majesty's Command,

EDMUNDS.

The following letter has been received by Sir Thomas Phillips, Chairman of the Council of the Society of Arts:—

Council Office, Feb. 20, 1861.

SIR,—I am directed to acknowledge the receipt of Mr. Foster's letter of the 16th of February, enclosing the Charter which has been granted to Earl Granville, K.G., the Marquis of Chandos, Mr. Thomas Baring, M.P., Mr. C. Wentworth Dilke, and Mr. Thomas Fairbairn, incorporating them as The Commissioners for the Exhibition of 1862.

The Commissioners, on the 22nd of November last, agreed to act, after a guarantee had been promised, to such an extent as to show a strong opinion in the public mind that the time for holding a second International Exhibition had arrived; after the guarantors had expressed an opinion that the absolute control of the undertaking ought to be entrusted to five gentlemen, named by them; and after the Commissioners of the Exhibition of 1851 had intimated their approval of the project, and their confidence in the proposed mode of management, and had promised their support and assistance; The Commissioners, therefore gladly accept a Charter which conveys to them her Majesty's gracious assurance that she is earnestly desirous to promote the holding of an International Exhibition of Industry and Art in the year 1862, and that she is pleased to sanction the proposed arrangements.

The powers conveyed by the Charter will, however, be practically inoperative until the Deed of Guarantee has been executed. When this has been done the Bank of England has agreed to advance the necessary loan of money on liberal terms. The Commissioners therefore desire me to request that you will represent to the Council the necessity of having the deed signed as soon as possible.

The Commissioners, unwilling to lose valuable time, have, during the interval required for the preparation of the requisite legal powers, taken such provisional steps as their position permitted.

The most pressing point was the building required for the Exhibition. In 1850, notwithstanding the possession of considerable funds, and the assistance of the most eminent architects and engineers, seven months elapsed before a design was adopted. The Commissioners therefore felt that if they postponed the consideration of this subject until they were a legally constituted body, the cost of the

building would be greatly increased, and a serious risk incurred of its non-completion by the appointed time.

The arrangements made by the Society of Arts, when negotiating for a site on the estate of the Commissioners of 1851, and their announcement that the Exhibition was to include pictures, a branch of art not exhibited on the former occasion, rendered it necessary to contemplate the erection of a building in some parts of a more substantial character than that of 1851.

A plan was submitted to the Commissioners by Captain Fowke, R.E., who had been employed by her Majesty's Government, in the British Department of the Paris Exhibition of 1855. This design was adapted to the proposed site, and was intended to meet the practical defects which experience had shown to exist both in the buildings in Hyde-park and in the Champs Elysées. It appeared well adapted for the required purposes, and its principal features were of a striking character, and likely to form an attractive part of the Exhibition. The Commissioners submitted the design to the competition of ten eminent contractors, four of whom took out the quantities. Three tenders (one a joint one from two of the contractors invited) were sent in on the day named in the invitation, but all were greatly in excess of the amount which the Commissioners could prudently spend, with a due regard to the interests of the guarantors.

The Commissioners have, therefore, had under their consideration, modifications of the plan, which, without destroying its merits, would materially reduce its cost.

The Commissioners having learnt that the French Government had applied, on the 3rd of November last, to the Foreign Office, to know whether it was intended to hold an International Exhibition in England in 1862, entered into private communication with that Government, from whom they have received satisfactory assurances of support, accompanied by a statement that it had been the intention of the Emperor to hold an International Exhibition in Paris in 1862, had the project not been entertained in England.

The Commissioners also requested the Duke of Newcastle, the Secretary of State for the Colonies, to announce the design entertained of holding an Exhibition, and the intention of the promoters to apply to the Crown for a Charter; and the Commissioners have been informed that his Grace has addressed a communication to that effect to all the Governors of Her Majesty's Colonies.

The Commissioners have had under their consideration the revision of the rules laid down in 1851, respecting the award of Prizes, the Constitution of Juries, the affixing of Prices, the Distribution of Space, the mode of Classification, and also the Organization of the additional Department of the Fine Arts.

When, therefore, the Guarantee Deed has been executed, the Commissioners hope to be able to proceed at once with the construction of the buildings, and to an-

nounce the rules and regulations for the arrangement of the Exhibition.

I have the honour to be, Sir,
Your obedient servant,
F. R. SANDFORD.

CENTRAL COMMITTEE OF EDUCATIONAL UNIONS.

A meeting, of which the objects are explained below, was held at the Society's House on Friday, the 8th inst. The following circular has been issued to the various Provincial Unions:—

CENTRAL COMMITTEE OF EDUCATIONAL UNIONS.

(IN CONNEXION WITH THE SOCIETY OF ARTS.)

House of Society of Arts, John-street, Adelphi,
London, W.C., 22nd February, 1861.

SIR,—The meeting summoned to take into consideration the "Proposals" which were communicated to you by the Honorary Secretaries of the "Southern Counties Adult Education Society," was held here on Friday, the 8th instant.

The Chair was taken by Sir THOMAS PHILLIPS, Chairman of the Council of the Society of Arts.

There were also present—

The Rev. THOMAS BACON, Honorary Secretary of the Southern Counties Adult Education Society.

The Hon. and Rev. S. BEST, Honorary Secretary of the Southern Counties Adult Education Society.

BARNETT BLAKE, Esq., Agent of the Yorkshire Union of Mechanics' Institutes.

HARRY CHESTER, Esq., Vice-President of the Society of Arts.

The Rev. SAMUEL CLARK, Chairman of the Central Board of Examiners of the Society of Arts.

The Rev. C. D. GOLDIE, Member of Committee of the Bucks and Berks Adult Education Society.

The Rev. DAVID MELVILLE, Member of Council of the Worcestershire Union of Educational Institutions.

JOHN SLANY PAKINGTON, Esq., President of the Worcestershire Union of Educational Institutions.

SAMUEL REDGRAVE, Esq., Treasurer of Society of Arts.

WM. SPOTTISWOODE, Esq., F.R.S., Member of Council of Society of Arts.

F. TALBOT, Esq., Secretary of the South Staffordshire Union of Educational Institutions.

The Rev. T. H. TOOKE, Southern Counties Adult Education Society.

The following resolutions were passed unanimously:—

1. "That to promote uniformity of action and a fixed standard of Examinations in Provincial and District Adult Education Societies in connection with the Society of Arts, a Central Committee be established, to consist of two representatives of each of such Societies, four members of the Council of the Society of Arts, and the Chairman of the Society's Central Board of Examiners."

2. "That the Society of Arts be requested to provide for the correspondence of the Committee."

3. "That the gentlemen present form a Provisional Committee for carrying out the objects in view."

The Provisional Committee earnestly hope that your Union will co-operate with them, and send representatives to the Central Committee.

It is not proposed to interfere in any way with the government of the Unions, nor to supersede anything already accomplished by the Society of Arts, by the District Unions, or by the Local Boards and Institutions. On the contrary, it is a principal aim of the central committee to promote the better accomplishment of the objects of all those bodies.

The importance of the systematic instruction and examination of adults is now generally acknowledged; but, while much has been done for those objects, a great deal more is required before the necessary machinery for attaining them will be complete.

The Local Examinations of the Universities have had an excellent effect upon the education of the higher and middle classes, but are not intended for the lower classes, nor open to persons above 18, to women, or to young children. The inspection of the Committee of Council on Education has been of the greatest service to the elementary education of the working classes, but takes effect only upon children at school, *i.e.*, children under 10 or 12 years of age.

The "Previous" and "Final" examinations of the Society of Arts are especially designed for the industrial classes in general, and may be taken advantage of in any part of the United Kingdom. They were held last year, with great success, before 63 different Local Boards in England, Scotland, Ireland, and Wales, and will probably be held this year in many additional places. They are limited, however, to persons of 16 years of age and upwards; and, in order to reach effectually those classes of the industrial population who are at present disqualified by the want of the prescribed age and attainments, and to lead them on to these examinations, some further provision has from the first been seen to be necessary.

The great point is that there should be everywhere provided for children, when they leave their day schools, not only the means of continuing their instruction in evening schools, or otherwise, but also those inducements to perseverance which are to be found in examinations, certificates, and prizes. Such a provision has already been made to a considerable extent by the District Unions of Institutions, Adult Educational Societies, and Local Boards of Examination connected with the Society of Arts; and the Society has constantly recommended to the Institutions that they should group themselves into District Unions, and to the Unions and Local Boards that they should conduct Local Elementary Examinations, and grant certificates and prizes, on their own authority, in order to supply this want.

The Provisional Committee is very far from disparaging the excellent results which the District Unions and Local Boards have accomplished in this direction; but there is such a want of uniformity in their proceedings, and the subjects and standards of their elementary examinations vary so greatly, that their Certificates have no settled value. The work is generally fragmentary, instead of uniform, and the trouble and expense of preparing and printing the examination papers and other documents are unnecessarily heavy.

It is now intended to have a permanent "Central Committee of Educational Unions in connexion with the Society of Arts;" and it is hoped that, by periodical meetings of the representatives of the various Unions, the experience of each Union will become available to all the others; that a uniform system of elementary examinations (with only such variations as may be requisite to suit different localities) and corresponding certificates may be established, throughout the United Kingdom, for those who have ceased to be admissible to the examinations of the Inspectors of Schools, and have not as yet become admissible to the examinations of the Society of Arts, and that the certificates granted by any Educational Union, represented in the Central Committee, may have everywhere a known value and currency, being issued not on the authority of a mere isolated local body, but on the authority of a local body having a well understood place in a general and truly national system, which embraces the Society of Arts' Union of Institutions and Local Boards, and all the Provincial and District Educational Unions and Adult Educational Societies which may be represented in the Central Committee.

If that Committee prepares, prints, and distributes, at cost price, as is proposed, such examination papers, certi-

cates, and circulars, as may be used in common by all the Unions, there will be a great saving of trouble and expense.

The Society of Arts has undertaken to provide for the correspondence of the Central Committee, at least for the present, and until it becomes too onerous; and its proceedings may be reported in the Society's *Weekly Journal*, which is sent gratis to all the Institutions in union with the Society.

To avoid the unnecessary re-examination of candidates, it is proposed that such of the certificates of the District Unions and Societies represented in the Central Committee as may be equivalent to the "passes" required for admission to the Society's Final Examinations shall be accepted by them as "passes" without a further "Previous Examination."

This is but an outline of what is proposed. Definite regulations in detail will be adopted when the Unions have had time to decide upon sending their representatives to the committee. It will not be necessary to send always the same representatives. The meetings will be held, as far as possible, in the spring, when gentlemen connected with distant localities are likely to be in London.

You will observe that the District Unions which are to be represented in the Central Committee are to be in connexion with the Society of Arts. This is requisite to bind the whole together for mutual advantages; but, as you are aware, the connexion with the Society in no degree compromises the independence of the Unions and Institutions; and any District Union may comprise in its own circle any number of Institutions and evening schools that have no other but that indirect connexion with the Society.

The first meeting of the Central Committee will be held here on Friday, the 22nd of March, at 2 o'clock precisely. It is proposed that the second meeting should be held on the day before the Annual Conference of the Society of Arts, when representatives from most of the Unions are likely to be in London.

In the meanwhile the Provisional Committee hope to hear from you at your earliest convenience. They will be glad to give any further information in their power, and to learn the views of your Committee upon these proposals, and they hope to be soon informed that it will co-operate with the Central Committee.

I am, &c.,

P. LE NEVE FOSTER, Secretary.

ELEVENTH ORDINARY MEETING.

WEDNESDAY, FEBRUARY 20, 1861.

The Eleventh Ordinary Meeting of the One Hundred and Seventh Session, was held on Wednesday, the 20th inst., William Hawes, Esq., Member of Council, in the chair.

The following gentlemen were proposed for election as members of the Society:—

Durham, the Earl of, ...	{ 35, Grosvenor-square, W., and Coupland Castle, Wooler.
James, Jabez Stanley,	{ 26, Watling-street, E.C.
Powis, Charles,	
Wood, Thomas, Ph.D.,	
	{ 123, Upper Thames-street, E.C.

The following candidates were balloted for and duly elected members of the Society:—

Dixon, Thomas	{ Millgarth Mill, Dyer-street, Leeds.
Hughes, Richard Hugh	{ 96, Hatton-garden, E.C.
Leach, George	
	{ Britannia Mills, Leeds.
Martin, John	{ Killyleagh Mills, Co. Down, and 29, Ann-street, Belfast.
Rein, Frederick Charles	{ 103, Strand, W.C.
Reynolds, Wm. G. ...	{ 20, Stratford-place, Camden-square, N.W.

The Paper read was—

THE ALPACA; ITS INTRODUCTION INTO AUSTRALIA AND THE PROBABILITIES OF ITS ACCLIMATISATION THERE.

By GEORGE LEDGER.

I propose this evening to treat my subject more in a popular and commercial than in a scientific manner, taking more the experiences of practice than the theories founded upon scientific observations, although no one feels more than I do the obligations we owe to them. Having the advantage of constant communications with my brother, Mr. Charles Ledger, who has recently introduced the alpaca into Australia, I will endeavour to place before you the results of his devotion of a great portion of 22 years of his life to the study of the peculiar habits of this valuable animal, and to the accomplishment of his enterprise.

It may be asked, Why this interest here in England upon the acclimatisation of a new animal upon lands situate at our antipodes? The answer is, the first physical necessity of mankind is food, the second clothing. Of the principal substances used in the manufacture of clothing—wool, cotton, flax, and silk—wool is second in importance. The acclimatisation of the alpaca simply means the growth of more wool.

There are two great experiments in connexion with our national prosperity, which will probably take the lead of all others during the next quarter of a century, viz., the growth of cotton either in India, Africa, Australia, or South America, and the increased production of wool.

The alpaca, the llama, the vicuna, and the guanaco, were unknown to Europeans prior to 1525, when Pizarro, with his followers, first set foot on Peruvian soil; the two former were domesticated, while the two latter, in a wild state, ranged the mountainous tracts of the newly-discovered land. To the new comers, these animals, particularly the llama and the alpaca, appeared to partake of the properties of the camel and the sheep.

I notice the guanaco first, because it is the largest of these animals, but, as it is scarcely to be called a wool-producing animal, the supply being insignificant, and little or none of it being exported, I shall very shortly dismiss it from consideration.

The region between the Andes, or Eastern Chain, and the Cordilleras, or Western Chain, comprises a vast plateau, or rather many table lands, about 12,000 feet above the level of the sea, which is called by the natives "Puna." The surface is principally covered with a short fine grass, and there are many hilly pastures; and here are found the llama and the alpaca, the guanaco, and the vicuna, but they are not confined to this region. In summer the flocks of llamas and alpacas are driven to an elevation of 15,000 to 16,000 feet, and in winter to an elevation of 12,000 to 14,000 feet.

The guanaco ranges over a greater extent of country than either of the other species, being found on the immense tracts of table land as far south as "Terra del Fuego," and north to the slopes of the towering Chimborazo; in appearance it very much resembles the llama, although nearly half as large again—the wool is much shorter, coarser, and intersected with hair, and worked up by the Patagonians and Aurocano Indians into blankets, ponchos, &c., while its skin is used as a quilt. The meat is the best of the class, and is highly esteemed. It is very seldom domesticated.

The vicuna, like the chamois, inhabits the highest tracts of land; it is the smallest but most graceful animal of either of the species; its flesh is principally used very slightly salted, dried in the sun, frost, and wind, under the name of *charque*, although it is not so much esteemed as the flesh of the guanaco or the llama. Its wool is finer and more valued even than that of the alpaca, but its yield is very small, seldom, if ever, exceeding a pound a year. My brother informs me he has succeeded in pro-

ducing a cross between the alpaca and the vicuna, which is termed the paco-vicuna, and that its wool partakes of the peculiar softness and superior fineness of the vicuna, and the greater length of staple of the alpaca. I have also heard from gentlemen who have spent many years in Peru, Chili, &c., that the curate of San Antonio, a small town about 40 leagues from Puno, has also succeeded in producing a similar cross, even to the 2nd and 3rd generations, which produce a splendid wool; this reverend gentleman, has, I am given to understand, received from the Peruvian Assembly a vote of thanks, and his portrait decorates the walls of the museum of Lima, amongst the the Viceroy of Peru, with an inscription declaring him to have deserved well of his country; and I believe he enjoys a pension of £120 from the Peruvian Government.

Although the quality of the vicuna wool stands so high in the estimation of manufacturers, the quantity is so small that I have not been able to obtain any record of the amount brought within the circle of commercial operations, a large quantity being consumed in the country in the manufacture of ponchos, sombreros, &c. The skins are brought to this country with the wool upon them.

The llama, the larger and least valued of the domesticated animals, about the size of the red-deer, partakes somewhat of the nature of the Arabian camel. Like the camel, it is used as a beast of burden; like the camel, it can live many days without water, but it is more useful than the camel, inasmuch as its flesh is used for food, and, when young, is savoury and nutritious; and its wool for clothing, and other useful purposes—to a much greater extent than that of its Arabian compeer.

From the earliest period to which even Peruvian records extend, it appears the llama has been used as a beast of burden; its load is generally from 60lb. to 100lb. and 150lb., and its rate of travelling about three to five leagues a day; it is driven in flocks of sometimes as many as 500 to 1,000, and requires little trouble from the drivers, one of the oldest and most experienced leading the way, and the others following.

The organisation both of the llama and the alpaca is admirably suited to the nature of the country they inhabit. The eye, from its size and shape, indicates the possession of a strong and quick sight, and also enables them to bear the reverberation of the rays of the sun from the sand and snow; the sole of the foot is guarded by a cushion, and the toes armed with hard and curved nails, which enable them to climb with ease steep and craggy places; the construction of the mouth and teeth enables them to cut short grass upon the ground, while, joined to the length of neck, and with the aid of the tongue and cleft lip, they can reach and cull herbage growing in interstices of rocks as well as the tender shoots of tall shrubs. The division of the stomach into compartments enables them to retain both food and water, and to use the latter for the assistance of the process of mastication or to allay thirst.

The number of these animals employed in Peru and Bolivia in the carriage of barrilla, grain, wool, bark, ores, and other products from the interior to the coast my brother estimates at over 600,000, and for the interior communication between town and town, mines and amalgamating establishments with ore and fuel, at double that number, giving a total of 1,800,000 so employed.

The llama wool is principally consumed in the country—very little being exported; it is used for sacking in the transport of grain, flour, &c. About 2,000,000 lb. are annually consumed in this way. The "soga," or cord, by which the load is secured to the back of the animal will consume annually another 2,000,000 lb. Many and varied are the articles manufactured from the llama wool—cordage, carpets, bed coverlets, bags and sacks for various purposes, taking, perhaps, 2,500,000lb. The alpaca wool, of greater value and more certain in its demand, so that the llama wool is more used in the country. Those used as beasts of burthen are never shorn; their wool serving the purposes of a pack.

The meat of the llama is highly nutritious; the Indians kill off the old ones of their flocks from time to time during the year.

THE ALPACA.

The alpaca stands about 4 feet in height and is of inferior size to the llama, the size of a full grown deer, producing a much finer and longer fleece.

The Indians hold for this animal a superstitious reverence, and most firmly believe, that any sufferings the animals may undergo on being driven off their pasture grounds, will be visited on them and theirs.

In the 16th century, and even from the remotest times, the Peruvians, being comparatively (to the other tribes of the great continent of America) a civilised people, and well acquainted with the arts of spinning and weaving, fabricated from alpaca wool, textures of much delicacy and beauty, which were highly prized as articles of dress. And that the use of them had prevailed for centuries is proved by the opening of very many of the "Huacas" or ancient tombs of the Peruvians, in which the dead had been enwrapped in stuffs made from the fleece of the alpaca. The wool having risen in value and become an article of so much demand, little or none is at present manufactured in the country, or has been for the last 25 or 30 years. Its fleece is superior to that of the sheep in length and softness, averaging 7 to 9 inches, and sometimes it is procured of an extraordinary length. The fleeces when annually shorn, range from 7 to 10, 11 and 12 lbs. Contrary to experience in other descriptions of wool, the fibre of the Alpaca's fleece acquires strength without coarseness, besides each filament appears straight, well formed, and free from crispness, and the quality is more uniform throughout the fleece. There is also a transparency, a glittering brightness enhanced on its passing through the dye vat. It is also distinguished by softness and elasticity, essential properties in the manufacture of fine goods, being exempt from spiral, curly, and shaggy defects; and it spins easily when treated properly according to the present improved method, and yields an even, strong and true thread.

Notwithstanding the remarkable quality and beauty of the alpaca wool, it was long before its value was appreciated in Europe. According to the best authorities, the first person in England who produced a marketable fabric made from this material, was Mr. Benjamin Outram, a scientific manufacturer, of Greetland, near Halifax, who, about the year 1830, surmounted with much difficulty the obstacles encountered in spinning the wool, and eventually produced an article which sold at high prices for ladies' carriage shawls, and cloakings; but their value arose more from being rare and curious articles than from intrinsic worth. These were, it is well established, quite destitute of the peculiar gloss and beauty which distinguish the alpaca lustrous and fabrics of later times, and after a short period the manufacture was abandoned.

To Mr. Titus Salt, of Bradford, must, undoubtedly, be awarded the high praise of finally overcoming the difficulties of preparing and spinning alpaca wool, so as to produce an even and true thread, and by combining it with cotton warps, which had then (1836) been imported into the trade of Bradford, improving the manufacture, so as to make it one of the staple industries of the kingdom; he has, by an admirable adaptation of machinery, been enabled to work up the material with the ease of ordinary wool.

And now, not only are alpaca goods produced in every conceivable variety and style, but at all prices, to suit the means of all classes of the community. Blended with silk thread, they have the appearance of fine lustrous satin; with figures and patterns thrown upon them in silk of different hues, they serve as admirable substitutes for figured silks, both for ladies' dresses and for waistcoatings, whilst with cotton woven amongst its fibres, the article may be sold at such a moderate price as to bring it within the reach of the most humble.

Gentlemen are provided by means of this fabric with waistcoating as cool as any cotton, yet rich and lustrous as any silk. Dwellers in tropical climates are thankful to possess a black coat which, while it has the appearance of broad-cloth, is not a fourth of its weight.

Most of the alpaca wool taken into the United Kingdom, is unshipped at Liverpool, but a small portion is also carried to London. At these two ports, it may be asserted, the whole imported is landed. It arrives in small bales, weighing 60, 100, 150 lbs. The 1st put up for llama carriage; the 2nd for donkey carriage; the 3rd for mule carriage.

Dating from the year 1834, when the importation of alpaca wool sprung up as a permanent branch of commerce, the demand has been a growing one, the quantity imported being, in—

	lbs.		lbs. ½
1834	5,700	1839	1,325,500
1835	184,400	1840	1,650,000
1836	199,000	1841	1,500,000
1837	385,800	1842	1,443,299
1838	459,300		

Since the year 1843, the returns of alpaca wool imported into Great Britain, are of a more reliable character. The following table has been drawn up from "data" furnished by the Board of Trade.

	lbs.		lbs.
1843	1,458,032	1852	2,068,694
1844	635,357	1853	2,148,267
1845	1,261,905	1854	1,267,513
1846	1,554,287	1855	1,446,707
1847	1,527,300	1856	2,974,493
1848	1,521,370	1857	2,359,013
1849	1,655,800	1858	2,688,133
1850	1,652,295	1859	2,501,634
1851	2,013,202		

The bulk of these importations have been consumed in England, and the quantity re-shipped for the Continent has been comparatively trifling in amount. We must yet allow some 500,000 lbs. shipped annually from Peru to France and Germany.

In 1836, the price was 8d. per lb. During the last ten years, the prices have fluctuated considerably, from 1s. 8d. per lb. to 3s. 9d.

It may be interesting to inquire whether this large supply will be continued, and I regret I am compelled to form the opinion that it will not, unless a change takes place in the manner in which the trade is conducted, unless justice and right are better observed, and unless the Indians (shepherds and owners of flocks) are considered as, and treated as, brother traders, instead of mere producers of raw material. I am fearful the sudden increase of the demand was the cause of greater efforts being made to meet it, which have not been attended by a corresponding effort to increase the number of the animals. I fear the practice of the Indian not to shear the female alpaca has been departed from, and a decrease in the flocks will result. It is true that the attention lately drawn to the value of the wool of the alpaca may also lead to a more intelligent system of cultivation; indeed, I learn from my brother that a friend of his who, in 1843, did not possess a single alpaca, in 1857 had 15,000 on a large estate held by him.

I will give you an example of how the "trade" is carried on:—"A party, by some means or other, procures the appointment of 'Governador' of a district, and quickly enters into a contract with some mercantile establishment on the coast for a supply of, say, 500 to 1,000 quintals (100lbs.) of alpaca wool at 50 dollars (Peruvian) per quintal. As soon as the contract is made he orders the appearance before him, on the day fixed, of all the 'Ylacatas,' chiefs, or heads of communities, within his jurisdiction; he then apportions the quantity of alpaca wool to be delivered by each, according to the number of alpacas possessed by the community he represents; payment in full is then made in ad-

vance, at rates varying from 10 dollars to 15 dollars per quintal—the wool thus collected is tightly pressed by the hands and feet into sacks, weighing 110 lb., and the Ylacatas are ordered to supply, in the same manner, the requisite number of llamas for the carriage of the wool to its destination. Any resistance on the part of Indians to supply the wool and llamas for its carriage is met by the Gobernador by imposition of most harassing gratuitous service to the State, such as repairs of roads, foot postmen, domestic servitude; and often by sending the party guilty of desiring to do what he thought fit with his own, as a recruit to the first regiment at hand, with “official” recommendation to the commandant thereof, that effectually prevents the Indian for a long time, and often for ever, again entertaining the dangerous and turbulent idea of opposing the wishes of his Gobernador. Do not suppose that the above is a sketch of an exception to the generality of those in authority over the Peruvian and Bolivian Indian—far, very far, from it; it is, indeed, the rule that actuates the conduct of sub-prefect to turnkey downwards, in all the provinces of the interior of those countries where the Indian is to be met with.” If the Indian sees the Ylacata coming towards his hut, and divining his intent, runs away to hide himself, he does not avoid his persecutor. On his return he finds the money on the floor, or suspended in a bag from the rafters, with an intimation of the quantity of wool required at 10 to 15 dollars per quintal, and the time of delivery; he cannot help seeing it, and is obliged to take it and supply the wool. If he does not, his alpacas are shorn, and even then, if there is not wool enough to make up the quantity he is put in prison to force him to pay the deficit at the price contracted to the merchant, and, if this is not paid, his flocks of sheep, alpacas, llamas, &c., are sold to make up the amount.

As a beast of burthen the alpaca is little used, the Peruvian Indians have too much veneration for it, and would consider it a sacrilege so to use it. Europeans, however, occasionally make use of it, and, I believe, in the quicksilver mines of Huancavelica it is found nearly as useful as the llama, although the load it will carry is smaller.

The alpaca was formerly but little used for food by the Peruvian Indians; they seldom, if ever, killed it for the purpose, but would eat it when it died a natural death. Of course, when so obtained, it did not rank high. It has latterly been more used, and when young is by some considered delicate and nutritious.

There is still another animal which demands my attention, and which is probably destined to play a considerable part in the future history of wool-producing animals. I mean the cross between alpaca and the llama, called machurgas, from “machorra,” a Spanish word, meaning ‘a barren sheep,’ of which there are frequent instances in Peru and Bolivia. Walton, in his work, says:—“From the alliance a beautiful hybrid results, if possible, finer to the eye than either parent, and also more easily trained to work, but, like the mule, it does not procreate;” in which he is confirmed by General O’Brien, who resided twenty years in Peru, ten of which he served as aide-de-camp to San Martin, the Liberator, a great traveller on the Andes, and a landed proprietor and miner. The General says:—“There is, however, a beautiful animal produced between the llama and alpaca, much handsomer in form and figure than either, also better adapted for work, but it does not breed. These are the animals I principally used at my mines to bring down the ores from the mountains.”

In some parts of Peru and Bolivia, these animals, I am informed, are known by the name of guarisso, which is derived from the Quichua Indian, and signifies “a foul thing.”

I am not about to enter into a discussion on the vexed question of “fixity of species.” I must leave this to be settled by others much more competent to deal with such scientific questions than I profess myself to be, but I must direct their attention to this fact, that the opinions of Walton and O’Brien must now be considered as proved

to have been entirely unfounded, my brother having bred animals to the third generation, from female machurgas or guarissos, by reverting back to the original alpaca stock on the male side.

I find mention has recently been made of yet another animal, the aviru, said to exist in immense numbers in Patagonia, but whether this is a new species or a variety of the vicuna, has not yet been determined. A rug made from its skins, by the native Patagonians, was exhibited at a meeting of the Literary and Philosophical Society of Liverpool, 18th May, 1857.

It would, indeed, be surprising if animals, so useful to man in everyway as the llama and the alpaca, producing him food, clothing, both in the shape of skins and wool, and helping him in his labours, should not have created in the conquerors of Peru and Bolivia, and their successors, a desire to transfer them to their own countries. Such has been the case; many have been taken to various parts of Europe—royalty led the van, nobility followed—but, as might have been anticipated, the representatives of commerce have been most active. Time does not permit me to attempt any account of the llamas and alpacas that have been introduced into this country and other parts of Europe, which, notwithstanding all the care bestowed upon them, although they appear to breed, do not appear to have become perfectly acclimatised. They have been regarded more as specimens of rare and curious animals, fitted for the ornamentation of the parks of our nobility and gentry, than as an article of commerce. I will not here enter into a discussion of whether, under favourable circumstances, the alpaca might not be acclimatised in some parts of this country, I am rather inclined to the opinion that when we know more about it, and its peculiar habits and wants, it perhaps may. I am afraid the main cause why it has not, and perhaps will not, thrive with us, is the humidity of our atmosphere, and dampness of our soil, as well as the unsuitableness of our grasses for its sustenance. Its favourite food in its native country is the ichu or ycho, a rushy kind of grass, of which it is immoderately fond, and which I believe is not found in this country.

Many animals had been exported, and in 1844 the British Consul at Arica was requested to send home sixteen alpacas for her Majesty Queen Victoria, eight of which were shipped on board a vessel-of-war, and eight were brought to Liverpool by the *Octavia*. The day after their embarkation, General Yguain (then prefect of the department of Tacna) was perfectly furious at their having been placed beyond his reach, and raked up an old decree of 1829, strictly prohibiting the exportation of alpacas under very severe penalties, but which had remained a dead letter, seldom, if ever, put into operation, and the existence of which was almost unknown, and stopped the exportation of a further flock of 40 alpacas intended for Germany, appealing to the government at Lima to support his act, which resulted in a decree of Congress, April 5, 1845, prohibiting the exportation of alpacas in all the ports of Peru, imposing very severe penalties on those caught infringing the law, which has been strictly enforced up to this day.

This decree has not allayed, as it could not allay, the desire to possess them; opposition often becomes the parent of determination, and when a thing is denied to us we often attach a greater value to it than it deserves, and become more intent on its possession, even when it is not worthy of the efforts we make to obtain it.

The vast success that had attended the introduction of the Merino sheep into our Australian Colonies, and the supposed suitability of its climate and vegetation to the alpaca, led to many attempts being made to introduce them there but without success. My brother was led to consider a plan, which he ultimately executed, of getting them out of the country, for which he was peculiarly qualified by his long residence (from 1836), his intimate acquaintance with the inhabitants of the interior, and their languages and customs, acquired by having been the

representative of some of the first mercantile houses in the country in making contracts with the Indians for wool, bark, &c., and in frequent journeyings in their superintendence. He writes thus:—

"Several times, from 1845 to 1848, were applications made to me by different parties, to get alpacas out of the country, but as I well knew that any such attempt must be attended by difficulties of no ordinary nature I paid no attention to them. I began at that time to think that this valuable animal required being better known, and its habits studied, hoping that in course of time the decree would be annulled, or some revolution in the country would enable me to get them out through a Peruvian port. In the beginning of 1848, I rented a large estate, Chulluncayani, on the frontier of Peru and Bolivia, and among other occupations, such as collecting wools, copper from Corocoro, and Peruvian bark, commenced breeding the alpaca; little by little I collected at first 200; all sorts of stratagems had I to make use of to obtain these, and then they were old and many infirm ones; every means were devised by the Indians on the estate to prevent my breeding them, but after all, in 1851, I succeeded in being the possessor of more than 600."

In February, 1852, my brother entered into arrangements with a gentleman of Tacna to carry out the undertaking, and immediately started for his estate at Chulluncayani, and after giving directions that in December or January, when the fresh pasturage would begin to appear and render driving them practicable, they should commence their journey towards the frontier of the Argentine Confederation, he returned to Tacna, and went thence to Valparaiso, from which port he embarked on the 24th of December for Port Philip, *en route* for Sydney, for the purpose of ascertaining from personal inspection whether the country into which he was purposing to introduce the alpaca was adapted for its naturalisation. In the following March he landed at Twofold Bay, and in company with a Peruvian gentleman who had accompanied him, made some excursions for about 12 leagues inland, which satisfied him that "the country was most admirably adapted for the alpaca." On the 22nd of March he arrived at Sydney, where he "became more and more satisfied as to the adaptability of the country for successfully rearing the llama species. Here, as in South America, the climate is dry; it matters not how much rain may fall, even for eight days consecutively, the rarity of the air is not affected by it, there may be, no doubt there is, a difference in the atmosphere immediately before and after heavy rains, but I contend no difference exists in the rarity of the air." On the 21st May he left Sydney, arriving in Valparaiso July 3rd, where he was compelled to seek for a new partner in his enterprise, Mr. — declining to go on with the matter, and even threatening to divulge the plan to the Government, and succeeded in concluding an arrangement with Messrs. Boardman, Dickson, and Co. (with others), for carrying out his project. Peru was then at war with Bolivia, and the attention of the latter government would naturally be called to its northern frontier, leaving the southern one, through which my brother proposed driving his flock, without troops, and comparatively open to him; accordingly, without delay, he went to Caldera, and thence to Copiapo, and commenced his preparations for crossing the Cordilleras to the province of Salta, in the Argentine Confederation, and thence into Bolivia, to endeavour personally to learn what had become of the animals he had directed, in the previous September, to be driven in that direction from Chulluncayani.

At Copiapo he again met with a Mr. Samuel W. de Blois, of Halifax, Nova Scotia, a fellow passenger from Sydney, who was desirous of seeing a part of the interior of South America, and he became his companion. Accordingly, on 17th September, 1853, my brother, Mr. De Blois, Pedro Cabrera, their guide, and Pablo Soza, as general servant, with 12 mules and two horses with bells to keep the mules together, left Copiapo, much against the opinion of many friends, it being considered too early to

attempt the journey, Pedro, his guide, saying, "Certainly it was early, but with good mules it might be done." After encountering terrific storms of wind, drift snow and sand, and sustaining a loss of one horse and 2 mules, passing by the remains of a party of fifteen men and thirty mules that had perished two years before, besides frequently being reminded of the dangers of their journey by the skeletons of mules, oxen and donkeys, which clearly marked the road, on the 25th they attained the highest ridge, 12,000 feet above the level of the sea, and on the 27th arrived at Sangil, or St. Gil, the inhabitants of which could hardly believe any person so adventurous as to attempt the passes so early in the season. On 16th October, they arrived at Salta, 240 leagues from Copiapo. Salta has a population of 10,000, and the governor of the province resides here.

From Salta, Pedro was dispatched in search of the flock of alpacas, with directions to meet his master at San Christobal, distant 250 leagues, while my brother returned to Molinos with Mr. De Blois, with the intention of seeing him on his road back to Copiapo, and left him at Laguna Blanca on November 8, 1853. From this date to July, 1858, that of his arrival at Copiapo, with more than 300 llamas, alpacas, vicuñas, and their cross products, my brother either procured from the Indians, or bred, great numbers of animals, more than 1,000 of which he succeeded in getting into the territory of the Argentine Confederation, but these numbers were being constantly reduced by the inclemency of the weather (losing 200 of them in one snow storm), the difficulty of obtaining food, and from his flock having drank of the water of a lake infested with leeches. A second time he was compelled to cross and re-cross the terrible Cordillera to obtain the necessary funds. "In January, 1854, it now became necessary for my proceeding to Salta, to receive the money that I expected Messrs. Boardman, Dickson and Co., would have placed there for me. On my arrival, some eight days afterwards, I found that they, in lieu of sending funds, had determined to relinquish participation in the speculation. Without hesitation, I immediately determined on proceeding to Valparaiso, and I accomplished the distance—240 leagues, or 720 miles—in nine days. I arrived just in time to catch the steamer passing Caldera for Valparaiso on the 10th February, and arrived in Valparaiso on the 12th. Since leaving Copiapo, on the 17th September, 1853, I had gone over more than 3,000 miles on mule back. Finding that Messrs. Boardman, Dickson, and Co., were determined to have nothing more to do with the speculation, I soon came to terms with Messrs. Waddington, Templeman, and Co., for carrying out the undertaking."

It would occupy more time than is allowed to me to trace month by month, or even year by year, the dangers, privations, and vicissitudes he, his shepherds, and his flocks passed through, during these following four years. They trench on the romantic. His mules and donkeys were frozen to death; two of his shepherds, with their mules, were dashed to pieces, by falling over precipices; he was taken for a political spy, which idea he did not discourage, as it enabled him to keep his true purpose disguised. Twice he was arrested, and once had to defend his flock from forcible seizure. The loss of upwards of 200 of his flock from drinking of the water of a leech infested lake, in the Calchaquies valleys compelled him to seek a new spot in which he could habituate his animals by degrees to the kind of food he would be compelled to depend upon for their maintenance during their sea voyage, and also to carry out a plan he had devised of improving the wool of the llama by crossing with the alpaca. This spot was Laguna Blanca, "one of the four valleys which commence from the high table-lands to the west of Tucuman up to the main chain of the Cordillera. It lies in about twenty-seven degrees south latitude, but is nevertheless surrounded by perpetual snow, which crowns the mountain peaks enclosing the

valley." Being satisfied that he had at length found a desirable spot for the propagation of the species, not only did he at length acquire a new flock of alpacas, acclimated to temperatures less pure and rigorous than those in which their predecessors had been reared, but succeeded in educating them, to a certain extent, for the great voyage which lay before them. He built a hut of stones for himself and people, which furnished an indifferent shelter from the inclemency of the weather." For the animals, large yards were enclosed and provided with troughs, in which they were supplied with their daily rations of dry alfalfa, cut up and mixed with bran, to which they became gradually accustomed." On the arrival of the flock at Copiapo, after almost unexampled hardships and a separation from his family of six years, in May, 1858, great excitement was excited by their novelty. The city was almost deserted for several days, the people forming an uninterrupted procession between it and Punta Negra (a distance of six miles), where the flocks were at pasture. At length, in July, 1858, 322 animals were shipped at Copiapo on board the *Salvadora*, of 750 tons.

Respecting the manner in which these animals were got away, my brother says, "In no way have I infringed a single law of either Peru or Bolivia—to break or infringe a law or decree of a Government is one thing, to evade the intention is another thing. The decrees promulgated state that it is illegal to drive alpacas within a distance of 40 leagues of the sea-shore, and the penalty for so doing is the loss of the animals; and every person found with them, and the owners although not with them, are condemned to ten years labour in chains on the Chincha or Guano Islands. To smuggle alpacas out of Peru, if successfully accomplished, could be done in 20 days. To avoid being amenable to such law, is why I took such a round-about-way as getting the animals first into the Argentine provinces, and then into Chile for embarkation, in neither of which countries do such restrictions exist."

The fundamental principle of human society, laid down equally by statist and revealed law, is that "the profit of the earth is for all." For the sake of peace—of the settlement of property and society—of political expediency and the comity of nations,—that doctrine has, by the common consent of states, undergone modification; but the title of all mankind to inherit the common bounties of the Creator, and the varied gifts of nature, is still the governing principle of political ethics. The Chinese war has by many been deemed sufficiently justified, on the ground that no people are entitled to seal up their territory from the general intercourse of mankind, and to withhold the contribution of their peculiar products from the common stock of human enjoyment.

Of all regions of the earth that of South America is the most dependent on other countries for useful products. When discovered, it had neither horse, ox, sheep, or pig. All those have been presented to it by the Old World, and Peru requites these gifts by the positive prohibition of the export of its most valuable animal product, thus refusing to mankind a participation in the benefits it is calculated to confer.

The government of Peru has not imposed a heavy tax on the export of the alpaca. It has not restricted it, confined it within stringent conditions, or regulated the export by irksome custom-house regulations. My brother would willingly have paid any amount of taxation, or complied with any conditions the government might impose, but it would make no terms, listen to no conditions, hear of no compromise. It insisted on the preservation of a monopoly of an animal whose produce was so useful to man, in violation of that impartiality of commercial intercourse which friendly nations were entitled to expect from its laws. It acted upon the anti-social and anti-mercantile maxim, of appropriating exclusively to itself a gift and blessing intended for the common benefit of mankind. I say unhesitatingly, that it is a much smaller breach of the strict law of political or commercial morality to evade or even

to break such a law than it is to make it, and that the obligations of patriotism impelled my brother "to do a great right by doing a little wrong," in the evasion of a prohibition contrary to the laws of nature, and inimical to the interests of mankind. I may add, that if my brother's act may be called by some, politically or commercially, not strictly moral, he at least sins in very respectable company.

The introduction of one of the earliest flocks of Merino sheep into this country was accomplished under very similar circumstances. Geo. Ill., in 1787, determined to give them a fair trial, and a few from one flock and a few from another were collected in Estramadura on the borders of Portugal, and as they could not be shipped from any Spanish port without a licence from the King of Spain, they were driven through Portugal, and from thence conducted to the king's farm at Kew.

On the 28th November, 1858, this flock, consisting of 276 animals, arrived at Sydney and were immediately landed and temporarily located in the Government domain. I find, by an official report from my brother to the secretary for lands and public works, dated 16th April, 1859, that the flock then consisted of:—

- 46 Male alpacas, pure breed.
- 38 Female alpacas, pure breed.
- 110 Female llamas.
- 27 Females, cross-bred, between alpaca and llama, in first generation.
- 11 Females, cross-bred, between male alpaca and female, from first cross.
- 5 Females, cross-bred, between male alpaca and female, from second cross.
- 40 Lambs of first, second, and third cross.
- 4 Male vicunas.
- 1 Female vicuna.
- 1 Male cut llama, carrier.

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All much improved in condition since landing.

After a short sojourn at the town domain, the flock was sent to Liverpool, about twenty miles from Sydney, until a permanent locality could be fixed upon for them.

The idea of conferring on our Australian Colonies the immense advantages anticipated to follow on the introduction of an animal so valuable as the alpaca appears to have almost simultaneously presented it to the minds of several individuals.

Mr. Titus Salt, whose name is and ever will remain so intimately associated with this subject, might naturally be supposed to take a deep interest in it, and finding that the alpacas he had obtained from the late Earl of Derby and from other sources did not prosper here so well as he could wish, he sent two small lots to different parts of Australia, thus becoming, I believe, entitled to the distinction of the first introducer of the alpaca into our Australian Colonies. I find one flock of four arrived in the *Marshal Pelissier*, at Adelaide, consigned to a Mr. Haigh, of Port Lincoln, in March, 1857, to whom they were immediately forwarded.

Mr. Haigh writes, 7th Nov., 1860:—"The alpacas are not doing well. They have only increased one; the rest have all died. We lost one the other day, about two years old; it was quite fat, and looked healthy." The number was too small.

In July, 1858, Mr. Salt sent out to Mr. Matthew Moorhouse, Riverton, South Australia, two males and three females. One of each sex died on the passage. The other females have bred, but only one of the lambs has been reared.

A Mr. Eugene Roehn succeeded in procuring a flock of llamas and cross-breeds, which he drove overland from Peru to Guayaquil, and thence to Panama. From Panama they were taken to New York, where Mr. Benjamin Whitehead Gee purchased them, and brought them to England, where they were exhibited at Glasgow and

Birmingham, and then brought to London, and depastured in a park at Ealing. Ten of these animals were purchased by Mr. George A. Lloyd, of London, and sent in June, 1858, to Sydney, where they arrived 8th November, 1858, and produced £600. This flock was sent on to Moreton Bay. I have not been able to learn how they get on; the much larger and more valuable flock of my brother has perhaps absorbed all interest on the subject. Twenty-three of Mr. Gee's flock were purchased by a committee of Australian merchants, Mr. Edward Wilson, a name now well-known from his efforts in the acclimatisation of animals, birds, and fishes, Mr. Mackinnon and Mr. Westgarth being among the number, and shipped to Melbourne, where they arrived about February, 1859, and have, up to the present time, gone on excellently. (See Mr. C. Ledger's report, 30th October, 1860.)

While I thus cheerfully and willingly give to those who have laboured in the same field of industry, and yield to them the honour of priority in the introduction of the alpaca in Australia, I think my brother is justly entitled to the honour of being esteemed the largest, the principal importer; I believe there is no record of an attempt at acclimatisation being effected on so large, so stupendous a scale as that accomplished by him, and at so great a sacrifice of time, labour, and money.

In endeavouring to estimate the capabilities of a country for the successful and profitable maintenance of an animal new to its history, we must look first to its climate, and secondly to the food which it produces, and see if the one is suitable, and the other supplies what is required by the animal for its full development. An animal cannot be regarded as perfectly acclimatised until it is demonstrated that it can live in the locality to which it is introduced, as well as in its native country; that its produce can be turned to useful purposes; and that agriculturists will find their advantage in rearing it on an extensive scale.

I have already informed you that my brother was convinced, by the somewhat hasty visit he made to Sydney in 1853, of the adaptability of the climate and pasturage of the country to the alpaca, and of this he became daily more and more impressed while they were depasturing at Liverpool.

In May, 1859, the Government directed him to make a tour of inspection into the interior, with the view of ascertaining the most favourable part of the colony for depasturing the animals. He started in July. His report is now before me:—

THE SUPERINTENDENT OF ALPACAS TO THE SECRETARY FOR LANDS AND PUBLIC WORKS.

Liverpool, 23rd August, 1859.

SIR,—I do myself the honour to lay before you a report of my tour of inspection of a portion of this colony, undertaken by your direction, in search of suitable country for permanently locating the flock of alpacas, llamas, and vicuñas.

In doing so, I beg to state that my own observations of the capabilities of the country, or districts thereof, I visited for affording pasturage to the flock, are confirmed by the opinion of a Peruvian gentleman, who, with the sanction of the Government, accompanied me on my tour.

I started from Liverpool on the 6th July last, and proceeded along the Southern Road as far as Yass, extending my observations of the country over an area of four or five miles, and occasionally a greater distance, on either side of the road. From Yass I directed my course to the Murrumbidgee, whence, *via* Queanbeyan, Micaliago, and Bredbo, I entered Maneroo. A careful examination of the Bredalbane and Yass Plains convinced me of their suitability to the rearing of the alpacas; the neighbourhood of Micaliago, Bredbo, struck me as no less suitable. My opinion of the adaptation of these places to the above purpose is based chiefly on the marked identity of the natural features of the country with those of that part of South America from which the alpacas came. The country all

through Maneroo indeed corresponded so exactly with that of Peru and Bolivia, that I could easily believe myself back again in those countries. This similarity was still more apparent with respect to the Snowy Mountains, as that magnificent range appeared clad in their winter garb; Kosciusko reminded us of the Sorata or Yllimani, and, with the Australian Cordilleras in full view, we remembered our trials and hardships among the ranges of their more stupendous and more terrible counterparts of South America.

But it was, of course, on the natural pasturage of these places, as the most important object in our examination, that we bestowed the greatest attention. Not only are the pasturage and herbage, rocks and stones, identical with those of Peru, but I found throughout the districts I have indicated abundance of a description of wiry grass known as the "ichu" of South America. It is upon this grass that the llama tribe mostly feed, being extremely palatable and nourishing, and of which they are immoderately fond. The great importance of furnishing the alpacas with fodder as closely as possible resembling that on which they have been accustomed to feed in their native country, need scarcely be pointed out. It was accordingly my deliberate conviction, and also that of my companion, that the Maneroo district was admirably adapted for the location of the alpacas. Should the Government determine on locating the flock in that district, I would recommend for the purpose the country contiguous to the Snowy River, on account of the facilities which the undulating plains and mountain ranges would afford in obtaining a change of temperature whenever the removal of the flock to a warmer or cooler spot should be desirable. By continual thermometrical observations I found that a similarity of temperature existed in the months of July and August at Maneroo, to that of the country from which the alpacas were extracted; the thermometer at 7h. 30m., varying from twenty-four to thirty-one degrees.

The only thing I found to cause any apprehension was the existence of "fluke" in the sheep; in South America its ravages are counteracted by not allowing sheep, cattle, or llamas to drink the stagnant waters that might be formed from springs, lakes, or ponds; puddles formed by rain are not supposed to cause the disease.

I beg to recommend that the animals be moved up to Maneroo with as little delay as possible; and as my personal attention is necessary, I beg to request you will think fit to relieve me from my intended journey to New England, at least for the present.—I have, &c.,

C. LEDGER.

The Honourable the Secretary for Lands and Public Works.

The spot selected is called Nimity Bell, between Bombala and Cooma, in the Maneroo district, 260 miles from Sydney.

Before the animals left Liverpool for Arthursleigh on their way to the locality thus selected, about 200 were shorn, in November, 1859. The wool produced was about 6 cwt. of three sorts, alpaca, llama, and cross bred, and valued (by sample) by Messrs. Foster and Sons, of Bradford, at from 15d. to 2s. 2d. per pound, objection being made to the shortness of the staple.

Mr. Titus Salt bought the bulk, and has favoured me with a report. "Bale No. 1 contains only a few fair average fleeces, the great bulk being too short in the staple (supposed from being clipped too early), some of the fleeces are slightly crossed with llama."

"Bale No. 2 is divided into two divisions; the smaller one seems to be nearly all pure alpaca, but has also been clipped too soon, consequently it is too short for combing." The prices paid, were from 9d. to 18d. per lb., which appears to have been caused by the staple being too short, in consequence of too early clipping. It is to be hoped this will be remedied in future.

In addition to this official report, I find from private letters my brother says:—"The chain of snow-covered mountains that suddenly presented themselves to my view, on ascending a hill from Cooma, brought most vividly be-

fore me remembrances of past privations and hardships endured among the grand and stupendous Cordilleras; and I gazed with delight and enthusiasm on a landscape similar to those my eye had so continually scanned while on my hazardous journeyings through Peru, Bolivia, and Chili." Many writers on the alpaca, &c., are of opinion that without the ichu grass these animals will not thrive. This grass is found in South America, in Peru, and Bolivia only; and although the Andes extend from Patagonia to Panama, it is in Peru and Bolivia only that the alpaca is found. From inquiries I have made, I believe this ichu grass is not known in this country, except in botanical collections, and I am led to conclude that the failure of the alpaca with us is mainly to be attributed to this fact, while its presence in Australia, as well as in Peru and Bolivia, justify the anticipation of their acclimatisation in our Australian colonies.

My brother writes to me at various periods:—

"So far the animals are thriving well and augmenting in number."

"The lambs are a most decided success, that is those born in the colony."

"I am on my road to Maneroo with the animals. It will take me nearly two months to drive the flock there—close on 300 miles. I really think that the speculation is a great success (not pecuniary to me). The lambs born here are a great success, indeed. Only fancy! I write this from the house of the famous Mr. Arthur, of Merino sheep celebrity, and the alpacas are grazing in his park, part of the princely 'run' granted to him for introducing the Merino sheep into Australia."

"I am glad to say the animals are thriving wonderfully, of their success I have no doubt."

"I am perfectly convinced that the alpaca will in due time produce immense results to this colony, its acclimatisation and adaptability are no longer problematical, it is undoubtedly an immense success; the flocks are in magnificent order and thriving wonderfully."

"I am glad to tell you the flocks are thriving admirably. I do not for a moment doubt their complete success."

"We have had more than a month of continued rain, and, although the animals were fully exposed to it, I did not lose one; and at this season of the year they are more susceptible of inclement weather than at any other, on account of the pasturage being more scarce and less nourishing."

The amount of rain which falls on the earth's surface is exceedingly varied, but the moisture of a climate does not wholly depend upon the amount of rain registered by a rain-gauge; for some climates are humid, and yet not rainy; others dry, and yet subject to periodical torrents.

My brother writes to a friend as follows:—

"As you are one of the few who feel deeply interested in the success of the alpacas, and sympathise with my enthusiasm, I am sure you will not be wearied of my frequently writing to you about them. I send you specimens of wool, from animals of first cross between llamas and alpacas. It was born on the 27th April last. It is, therefore, of Arthursleigh growth, and I contend that alpaca wool was never grown at the same rate in Peru. It is truly astonishing. The length of staple and quality are beyond my fondest expectations. The animal yielding it is now little over five months' old, and would now clip fully 7lb. All are in the same state. The fact is, that in this country we shall soon astonish Peru, and I hope to send fleeces, grown at Arthursleigh, to the next exhibition in London, that will astonish Europe, too! Send the enclosed specimens to your son in England, and let him show his friends what Arthursleigh is doing."

Since the foregoing was written I have received the *Sydney Morning Herald*, December 21, 1860, from which I extract: "Since the arrival of the flock of alpacas at Arthursleigh, the animals have thriven even beyond the

most sanguine expectations of Mr. Ledger, so that the ultimate success of the importation is now placed beyond doubt. The present is the proper season for lambing, and the yield hitherto has been very promising. The number of the flock is now 311, and Mr. Ledger expects that by the end of March next it will have increased to 360. It is Mr. Ledger's intention, in future, to make October the lambing month. In Peru the Indians could not be induced to shear oftener than every other year, the manufacturers having fitted their machinery for a length of staple of two years growth, the practice of the Indians must be adopted here, otherwise our produce would be depreciated on account of the shortness of staple."

My brother took to Melbourne two of his pure male alpacas, two having previously been sent, which had been given to the government of that colony by the Sydney government.

I will conclude this part of my subject with a part of a Report on the state of the Melbourne flock, which I have already told you was presented to the colony by a committee of gentlemen who organised a subscription here for that purpose.

SIR,—I have been delighted to have had the opportunity of personally verifying the statement made to me, by my overseer, Pedro Cabrera, on his return to Sydney from this city, as to the splendid condition of your flock of llamas; and I unhesitatingly declare that in their native country it would be impossible to meet with any to surpass, and I very much doubt to equal it.

"I class your stock of llamas as of inferior breed, in size of animal, quantity, and quality of fleece."

"By continually crossing the female llama and its female progeny with pure male alpacas up to the seventh cross, purity of alpaca blood most undoubtedly will be obtained."

"There should not exist a chance of retrogression of breed. Every stage of crossing should be progressive, until arriving at the same purity as the male alpacas the Government of New South Wales has forwarded to you."

"I would strenuously recommend the preservation of the flock intact, until such time as every trace or sign of llama blood be eradicated."

"This species of animal requires a dry and pure atmosphere. Humidity under foot does them no harm, unless compelled at night to repose on wet ground."

"I would recommend their being exposed to every vicissitude, changing their folds every now and then during wet weather, so long as they are confined to a limited space for grazing on."

"This animal, when left to itself, at nightfall generally selects a sloping ground for reposing on."

"In my opinion it would be desirable to confine them as much as possible exclusively to the natural grasses of the country."

"The acclimatization of the alpaca and llama in Australia is now proved beyond a doubt. The smaller flock in this colony, and the larger one in that of New South Wales, have fully satisfied me as to the adaptability of this peculiar animal to the climate and natural grasses of the country."

"This animal is freer from constitutional diseases than ordinary sheep; less subject to those arising from repletion and exposure to rain. Foot rot, catarrh, and bottle, are unknown to them."

"Neither are its young exposed to those accidents liable to befall the lamb of sheep."

"The mothers are provident and careful nurses, nor do the young ones require any aid to make them suck."

"Except at the rutting season, these animals stand in no need of attention; the shepherd need only visit them occasionally; and such are their gregarious habits, that the members of one flock seldom stray away and mix with others, being kept in a good state of discipline by the old ones, who know their own grounds, and become attached to the place of their nativity, to which they return at

night, evincing an astonishing vigilance and sagacity in keeping the young ones together and free from harm.

"By trials, careful study, and intimate knowledge of the alpaca, after an almost daily association with this interesting animal of 22 years in South America, and two in Australia, it is placed beyond a doubt in my mind, that this animal may be naturalised and made to readily propagate in almost any climate; and every day the facilities and the efficacy of their proper breeding must become more apparent.

"The hardy nature and contented disposition of the alpaca, its extreme docility, and gregarious habits, cause it to adapt itself to almost any soil or situation, provided the air is pure and the heat not too oppressive.

"I had innumerable proofs of its hardness, and its power to endure cold, heat, damp, confinement, hunger, and thirst, vicissitudes to which it is constantly exposed on its native mountains.

"It is almost superfluous on my part, to assure you that at all times I will readily furnish all and every information in my power to give regarding this animal; as also willingly aid by supplying, from time to time, as you may consider necessary, such pure male alpacas as may be required to improve and finally raise your stock to uniformity and purity of blood.

"I will only further add, that the ratio of increase in your flock has far exceeded that in the flock under my charge.

"I have the honour to be, Sir,

"Your obedient servant,

"C. LEDGER.

"Melbourne, October 30, 1860."

In endeavouring to estimate what may be the results to our colonies of the introduction of the alpaca, let us look at what has resulted from the introduction of the sheep. In January, 1788, the population of New South Wales was 1,030, and its stock consisted of one bull, three cows, one stallion, three mares, and three colts. (Fairfax.) In 1788 Australia had no sheep of its own, the kangaroo and the dingoe were the only animals of any size that it possessed; and the first taken into the colony were procured from Bengal to provide the colonists with mutton and wool. These animals produced hair rather than wool. They are described in Widdowson's work as possessing "large heads, Roman noses, and slouch ears; they were extremely narrow in the chest; they had plain and narrow shoulders, very high curved backs, a coarse, hairy fleece, and tremendously long legs." By crossing these hair-bearing ewes with an Irish ram, Captain Macarthur effected great improvement, and he was persuaded that the introduction of the Merino sheep into the Colony would be of the utmost consequence, and in 1797 succeeded, with the aid of Captain Waterhouse, of H.M. Navy, in procuring a small flock of three rams and five ewes from the Cape of Good Hope, originally brought from Holland, which he had the satisfaction of seeing rapidly increase, their fleece augment in weight, and the wool very visibly improve in quality. He crossed all the mixed-bred ewes of which his flock had previously consisted, with the Merino rams. The lambs produced from this cross were much improved; but the produce from the second cross far exceeded his most sanguine expectations. He expressed the

opinion that in the fourth cross no distinction would be perceptible between the pure and the mixed breed. In 1796 the public and private stock of sheep in the Colony amounted to 1,531; in 1801, to 6,757, which is 633 over and beyond a calculation of Captain Macarthur on the basis that they would double themselves in two and a half years.

The following is a return of live stock in the colony of New South Wales from the year 1848 to 1857, inclusive:

Year.	Horses.	Horned Cattle.	Pigs.	Sheep.
1848	97,400	1,366,164	65,216	6,530,542
1849	105,126	1,463,651	52,902	6,784,494
1850	111,458	1,374,968	52,371	7,092,209
1851	116,397	1,375,257	65,510	7,396,895
1852	123,404	1,495,984	78,559	7,707,917
1853	139,765	1,552,285	71,395	7,929,708
1854	148,851	1,576,750	63,255	8,144,119
1855	158,159	1,858,407	68,091	8,602,499
1856	168,929	2,023,418	105,998	7,736,323
1857	180,053	2,148,664	109,166	8,139,162
1859	200,713	2,110,604	92,843	7,581,762

As these non-indigenous animals have thriven here so wonderfully, as they have also done in South America, and there appears to be considerable similarity between the two countries in temperature, climate, mountainous elevation, and natural pasturage, am I not justified in anticipating a glorious future for the alpaca in Australia?

The following is the quantity of wool imported into the United Kingdom from all our Australian colonies:—

lbs.		lbs.	
1820	..... 99,415	1841	..... 12,399,362
1821	..... 175,433	1842	..... 12,979,856
1822	..... 138,498	1843	..... 17,433,780
1823	..... 477,261	1844	..... 17,602,247
1824	..... 382,907	1845	..... 24,177,317
1825	..... 323,995	1846	..... 21,789,346
1826	..... 1,106,302	1847	..... 26,056,815
1827	..... 512,758	1848	..... 30,034,567
1828	..... 1,574,186	1849	..... 35,879,171
1829	..... 1,838,642	1850	..... 39,018,221
1830	..... 1,967,309	1851	..... 41,810,117
1831	..... 2,493,337	1852	..... 43,197,301
1832	..... 2,377,057	1853	..... 47,076,010
1833	..... 3,516,869	1854	..... 47,489,650
1834	..... 3,558,091	1855	..... 49,142,306
1835	..... 4,201,301	1856	..... 52,052,139
1836	..... 4,996,645	1857	..... 49,209,655
1837	..... 7,060,525	1858	..... 51,104,560
1838	..... 7,837,423	1859	..... 53,700,542
1839	..... 10,128,774	1860	..... 55,270,776
1840	..... 9,721,243	To 31st October.	

I have already shown you how the exportation of alpaca wool from South America has of late years increased; I now give the following calculation, made on the probable growth of our alpaca flocks in fifty years—a long time in the life of a man, a short period in the history of a people:—

We commence in 1861 with 200 females, 50 males = 250.

Females.	Lambs.	Males.	Females.		TOTAL.		De- cember.
					Males.	Females.	
200	would yield 120	60	60	at 60 per cent. (allowing 10 per cent. for deaths) ...	110	280	1861
200	" 120	60	60	" " Those dropt last year will not lamb.	170	320	1862
280	" 160	80	80	" " The female lambs 1861 will drop this	250	400	1863
340	" 200	100	100	" " " 1862 "	350	500	1864
420	" 250	125	125	" " " 1863 "	475	625	1865
520	" 260	130	130	at 50 per cent. only " 1864 "	605	775	1866
645	" 320	160	160	" " " 1865 "	765	935	1867
775	" 387	190	190	" " " 1866 "	955	1165	1868
935	" 467	235	235	" " " 1867 "	1195	1400	1869
1322	" 661	330	330	" " " 1868 "	1520	1730	1870

There will be, after deduction made for wear and tear, accidents, &c., 3250, as per above calculation. I further deduct 25 per cent. of total every period of ten years, thus leaving in round numbers 2500; at same rate, in

20 years, there would be	20,000
30 " "	160,000
40 " "	1,280,000
50 " "	9,760,000

At 7 lbs. wool—each 68,320,000 lbs., at 2s. per lb., £6,832,000!

From this it will be seen that, making deductions of a liberal nature, according to the present ratio of increase there will be in fifty years 9,760,000 head, the wool of which at 2s. per lb., will amount to the sum of £6,832,000 per annum.

When figures like these are given, incredulity is naturally awakened; but I do not know that there is anything unreasonable in the calculation. At all events, any reasonable reduction may be made and still leave a value sufficient to deserve the energy and solicitude of the public.

This is not my own calculation, I take it from the *Sydney Morning Herald*, of 3rd of August, 1860, and my brother thus writes respecting it:—

"Sir,—In your edition of 3rd instant I have read an article on the probable result, fifty years hence, of the alpacas, llamas, &c., introduced by me into this colony in November, 1858. I see nothing improbable as to such anticipations being realised; on the contrary, my experience of this animal, in South America and in this country, fully warrants the estimates, referred to as being effected every ten years, being carried out.

"Two hundred breeding females, and fifty males, produce, as per said calculation, 3,250 in ten years, or equivalent to multiplying original stock by twelve; continuing at the same ratio, the second period would bring 39,000. Now, instead of following up at that rate, and so as to make all and every allowance for unforeseen contingencies of epidemics, bad seasons, &c., I deduct furthermore one-third, and multiply by eight instead of twelve, still reducing the 20 per cent. periodically ten years, giving, at the end of fifty years, 5,606,720 animals, which, at 7lbs. wool only = 39,247,040, at 2s. per lb. = £4,924,704.

"The figures are large, no doubt; the time, too, is long. I do not wish to appear a visionary Utopian, although an ardent enthusiast, and hope I may not, through excess thereof, have been led into exaggeration. Figures, something like the above, I worked out nine years ago; they often appeared before me—in my mind's eye—during my solitary journeys, and more than once urged me to persevere, when, 'to hope seemed hopeless.'"

It will be borne in mind, that while the sheep has increased in the manner I have shown you, mutton has not been an article of food prohibited at the tables of our antipodean relatives; indeed, at the period of the immense influx of a new population, tempted by the recent discoveries of gold, fears were entertained that the appetites of the diggers joined to the desertion of the flocks, might act prejudicially on the interests of the wool trade; time, however, has proved this alarming anticipation to have been unfounded.

Notwithstanding the enormous draught constantly made on the flocks to supply the daily demands for food, notwithstanding whole flocks were consigned to the boilers by their panic-stricken owners, notwithstanding disease, caused and rendered more destructive by desertion, swept away large numbers, they are not now diminished, but show a steady increase.

A fortunate climate and an intelligent devotion to the rearing of sheep has prevented so great a calamity. Regions long thought barren, are now showing abundant pasturage. Irrigation, hitherto unthought of, has supplied, and in the future will supply, the

only deficiency of which the country has to complain. The alpaca, living to the age of 14 to 16 years, and not like the sheep, having daily demands upon its number, for the purposes of food, is more likely to fulfil the calculations I have given to you. By feeding on a coarse pasturage than the sheep, it will benefit the owner of land by bringing into use portions hitherto unproductive. It will bring more capital into operation. Labour will become employed in the new product; the shepherd tending the flocks; the sailor in transporting it to the seat of manufacture; the spinner and weaver, in forming it into the beautiful fabrics that spring from the looms of Bradford and Saltaire. The ship-owner and the merchant also will reap a profit while the wool is passing through their hands or is under their charge, and various classes of labourers will gain a portion of their means of existence in passing the wool from place to place, and from hand to hand in the various phases it must pass through from the raw state until it is displayed as clothing on our persons.

DISCUSSION.

The CHAIRMAN said it was now his duty to ask gentlemen present, who possessed any information upon this subject, to discuss the various topics suggested by the interesting paper they had just heard. There were many points which were worthy of notice:—first of all, the energy of an individual gentleman who, under great difficulties, introduced a new species of animal into our Australian colonies; secondly, the importance of promoting an increased production of wool when our supply of cotton might be in danger; and thirdly, the necessity which the present state of events imposed upon us of encouraging, by every means in our power, the production and importation into this country of the largest possible supply of raw materials of every kind. He believed there were gentlemen present who were qualified to give them information upon the wool trade and the fitness of the alpaca for Australia. There was one gentleman in particular to whom reference was made in the paper, and he was sure the meeting would be glad to hear the observations of Mr. Macarthur.

Mr. MACARTHUR had no information to convey with respect to the alpaca, for he was sorry to say he knew nothing of the habits of that animal beyond what might be acquired by cursory reading. Before he left New South Wales he had the opportunity of once or twice seeing the flock of alpacas introduced by Mr. Ledger, and he had no hesitation in saying that the paper read that evening conveyed a mass of most interesting information on the subject. The period during which Mr. Ledger had devoted himself to this object was somewhere about 22 years, and for nine years he was separated from his family in pursuing this enterprise. He mentioned this fact, in order that the meeting might appreciate the great exertions which had been made by Mr. Ledger in accomplishing his object. A vast sum of money was requisite for this purpose; he believed the amount was not less than between £4,000 and £5,000, which was the value put upon the flock at Sydney, and he knew that the amount occasioned difficulty in forming a company to undertake the purchase of the flock and the production of wool. It was considered too large a speculation, and required too much money for the settlers in a young colony to embark in it. The government, therefore, he thought very properly, stepped in and assisted Mr. Ledger under those circumstances, for there could be no doubt this was just one of those occasions when the government might intervene to supply the place of individual enterprise. It was hardly to be expected that two or three individuals, or even a company of persons, should embark upon a speculation of this kind, and, moreover, Mr. Ledger was then comparatively a stranger in the country; but the government having thoroughly investigated the subject, determined to interpose and make arrangements with Mr. Ledger for the accomplishment of the important object he had introduced

to their notice. He was glad to see, from the papers which arrived a few days since, that there were strong probabilities of some advantageous arrangement being made by which the government would divest itself of the property in the alpacas and make them over once more to Mr. Ledger himself. No doubt that was the most advantageous course that could be adopted, as it was not a matter in which the government should engage itself, unless under the exceptional circumstances which had been stated. The suitability of Australia for a wool growing country had been established by the figures relating to that commodity which had been given in the paper, and did not require any corroboration from him. There was one fact which he had noted as very remarkable—that was the statement contained in a letter from Mr. Ledger, from Arthursleigh, as to the great length and fineness of the alpaca wool produced in Australia, as compared with that of the animal in its native country. That agreed with the characteristic of the merino wool produced in Australia, which was remarkable for its greater length and strength, as well as the fineness of the staple. He recollected that, some 30 years ago, it was a subject of complaint amongst the woollen manufacturers that the wool of Australia was of too short a staple to be of much use to them for cloth; and it was then applied to other articles of manufacture, particularly mouselines-de-laine, which were principally made of Australian wool. The wool, however, now was of a much longer staple, and was particularly noticeable for its softness, especially the Merino wool. He would not attempt to enter into a calculation of the vast extent of country in Australia that was suitable for pasturage, both of sheep and llamas. He thought this country had reason to congratulate itself upon the fact that Australia was likely to produce a very large supply not only of sheep's wool, but also of that description of fleece which had been stated to be so valuable for other classes of manufactures, and there was no saying to what purposes the genius of our British manufacturers might not apply the wool of the alpaca when it came into the market in sufficient quantity to make it worth their while to turn their attention more especially to it. Referring again to the pasturage capabilities of Australia, Mr. Macarthur alluded to the communications recently made to the Geographical Society by Mr. Stuart, showing that the interior of the country was not, as was previously supposed, desert. This had always been his own opinion, and he was happy to find it corroborated by so eminent an explorer as Mr. Stuart. Whilst the western portion of the country varied in elevation from 1,100 to as high as 7,000 or 8,000 feet, the average elevation of the table land was not more than from 1,500 to 2,000 feet, which ensured a very temperate climate; and the late Sir Thomas Mitchell, who was a great explorer of the interior, in his work upon tropical Australia, spoke of having experienced nights of intense cold within that tropical region; so that the variations of climate which that country exhibited might be considered as affording all the essentials requisite for the successful growth of the llama wool, and the same remark was equally applicable to cotton, some very fine specimens of that commodity having been already produced in Australia.

Mr. F. T. BUCKLAND expressed his high gratification at the information conveyed by the paper, and also at the magnificent specimens of wool upon the table. He hoped they would not rest contented with introducing the alpaca into Australia alone. He thought they ought to try the experiment in this country, and when they saw the beautiful garments which were produced from this wool, he was sure they would have the aid of the ladies in bringing such animals into England. He thought that both the alpaca and the llama would thrive well in this country. They had been told that very fine wool had been obtained from the animals in the possession of Miss Burdett Coutts, which were living not more than three miles from London; and his friend, Mr. Waterhouse Hawkins,

could tell them that the animals did well in Lord Derby's park in the north of England.

Mr. P. L. SIMMONDS said that at the outset of his paper, Mr. Ledger had observed that probably it might be asked what interest had this country in a question of seemingly local interest like the introduction of the alpaca into Australia? To this he (Mr. Simmonds) would respond, that Great Britain, as a manufacturing country, had the greatest interest in promoting the extended production of wool in all countries, and more especially in her own colonies. The wool manufacture—the second of the great manufacturing interests—which engaged a capital at the present time for raw material, labour, machinery, and value of goods made, of fully £40,000,000, was, like the other great textile industries, insufficiently supplied with raw material for the enhanced demands made upon it for home consumption and export. Large as had been the increased production of wool in our African and Australian colonies, yet, with the competition from continental buyers, we were stinted in supplies, and had to pay enhanced prices for what we did get. And, what was worse, our manufacturers were driven to the use of ragwool or shoddy, to the extent of 50,000,000 lbs. a year. To meet the demand last year, with a deficient home clip, and with largely increased exports of home and colonial wools, the deficiency in supply for our woollen manufacturers became very apparent. Any increased supplies of wool for the present or future, would be of the greatest benefit to the kingdom. Hence he looked with hopeful interest to the efforts of Mr. Ledger in Australia, and to the information which had been laid before them that evening as to the probable results of acclimatising the alpaca there. As the meeting had just heard, it was only a quarter of a century ago that alpaca wool was first introduced into this country, and for the first five years the average imports were only 560,000 lbs. In the last five years the imports had averaged 2,600,000 lbs. per annum, and the advance in price in this period had been from 10d. to 2s. 6d. per lb. Constant as was the demand for this valuable long wool, which had been the making of Bradford, the supply had been almost stationary for the last five or six years, and Mr. Ledger had told them would probably decrease instead of increase, and in that case, where was Saltire to find a substitute? They had heard that evening that the alpaca had now been introduced into the three principal Australian colonies, and with every prospect of their doing well. For his part, looking at the wide extent of the country, the varied climate and temperature, the elevated regions that were to be met with in different localities, from Queensland in the north to Victoria in the south, that the pasturage agreed with them, and that even their tall, favourite grass or reed, the *ichu*, was found indigenous in New South Wales, he saw no reason why they should not prove a success. At all events, the accounts they had heard, both from Mr. Ledger and Mr. Macarthur, went to disprove the opinion so confidently advanced on a previous evening, that Australia was totally unfitted in every respect for the alpaca. Many years ago he (Mr. Simmonds) had advocated in his *Colonial Magazine* and other publications he was connected with, the introduction of the camel and the alpaca into Australia. Had the camel been earlier introduced they might not now have had to mourn the loss of Dr. Leichhardt and other enterprising explorers who had lost their lives in penetrating the great interior of that continent. He hoped also to see soon the vicuna and the guanaco introduced into Australia, for although less valuable as wool-bearing animals, yet they might aid the supply of food hereafter, and fill the place of the kangaroo, which was being fast exterminated. These animals, which ranged in such numbers from La Plata and Chili almost down to Cape Horn, would require no care, but would find abundance of food and suitable localities in Australia. It was even possible that the alpaca might be successfully introduced and naturalised in many other parts of the British posses-

sions, such as Tasmania and New Zealand, parts of the Cape Colony, Natal and India, and in Vancouver and British Columbia. But these were matters for future consideration. There might, and doubtless would, be failures, but useful enterprises, because they were new and apparently difficult, should not be discouraged or opposed by either sarcasms or sneers. When it was remembered how many animals, natives of tropical countries, were even now kept in health in so changeable a climate as Great Britain, there was hopeful encouragement for experiments under more congenial latitudes. Such efforts as those of Mr. Ledger were calculated to be highly beneficial to the colonies and to the mother country, and to stimulate others to exertion and enterprise in a similar direction.

Mr. B. W. GEE said his name having been mentioned with some prominence in the paper, he would offer a few remarks. A residence of many years in Australia enabled him fully to confirm the statements they had heard that evening, as to the adaptability of that country for the introduction of animals of the llama genus. Some eight or nine years ago some gentlemen in Sydney subscribed a sum of money for the purpose of sending agents into Peru to obtain a stock of alpacas, but they returned from the mission without having effected the object—they did not obtain a single animal. It had been attempted by other persons, but it was left to Mr. Ledger to achieve success; and although, perhaps, some of his (Mr. Gee's) animals might have been the first to land in the colony, still to Mr. Ledger was entirely due the merit of being the first successful introducer of this animal into Australia. It might be interesting to some to hear a few particulars of the way in which he (Mr. Gee) obtained possession of the flocks of alpacas with which his name was associated. Upon his return from Australia, about three years ago, he took it into his head to visit New York, and his arrival in that city was nearly contemporaneous with that of a flock of llamas, which had travelled a distance of about 4,000 miles on foot, having crossed the isthmus of Panama during the hottest weather. These animals were advertised for sale, having been previously exhibited at the Crystal Palace in New York. The poor animals, from the long distance they had travelled, were in a very bad condition at the time they were brought into the market. The proprietor of the flock, who was a Frenchman, had the modesty to ask £100 each for them; but at that time dollars were very scarce in New York, as it was during the monetary panic. They remained on hand till the winter, when they were put out to grass; and with reference to the question how far the animals would stand varieties of climate, he could say that he saw them nearly up to their backs in snow, with scarcely anything to eat, on Manhattan Island, where there was scarcely anything but stones. After having passed the winter in those most inhospitable quarters, the flock was advertised for sale in New York in the spring. He would read a short extract from the newspaper report of the sale:—

"The thirty-eight llamas that were imported into this city last Fall from Peru (or Chili), were offered at auction on Saturday, March 20, at the 'Dyckman farm'—a farm of four or five hundred acres of land, in the City of New-York. It is situated on the Harlem River, below Kings Bridge. It is principally occupied as a grazing farm for bullocks 'left over,' or waiting for market at the great Bull's Head, in Forty-fourth-street—the proprietor of the sale-yards having leased it for that purpose. It was in consequence of this occupancy that the llamas were sent up there to winter, they having been taken when landed to the market-place yards for keeping and for sale.

"It seems as though a chain of misfortunes has attended the first attempt to introduce a breed of domestic animals into this country—discouraging, we fear, to all future efforts to add a new, and, we doubt not, a profitable class, to our present stock. If we are not mistaken, the shipment was made from a Chilean port (we understand exportation of llamas is prohibited from Peru), by steamer to Panama, and consisted of seventy-two head. They were detained some three weeks at Panama, awaiting a vessel at Aspinwall for New-York; and although in charge of a native shepherd, eighteen or twenty of the flock

fell victims to Panama snakes, scorpions, poison herbage, and other Isthmus casualties, in the hottest part of the season. The remainder were then brought over in the cars, and shipped upon a brig too small to afford comfortable accommodation, with a bad provision of food, and therefore it is not a wonder that only forty-two of the number reached New-York alive. It is a wonder that all did not die, and that only four of the weakest lambs died after they were landed, since the whole of them were in such miserable plight that it was thought unwise to offer them for sale. They have, however, wintered better than a flock of sheep would if landed in the same condition, and all appear now very lively and healthy, notwithstanding their unwonted and long feeding upon dry forage; and, as an experiment, this has proved that these animals are easily wintered, in this latitude, and that they prefer the coarsest herbage, either green or dry. In Chili they are fed upon alfalfa, a very coarse kind of clover, and they might, if domesticated here, be fed the same, or on pea vines, bean stalks, buckwheat straws, or coarse weeds—such as our animals reject.

"If adopted into our family of domestic animals, the llamas must be kept principally for the fleece, just as sheep are in some places, where mutton is not esteemed for food, since they would not be valuable as beasts of burden, except in very mountainous districts; and their flesh, although eaten in South America, is not esteemed by such of our countrymen as have tasted it. Lieut. Phelps says of it: 'I have tried the flesh, and, although not partial to it, could live upon it if hard pushed.' That observation was made of the animal in its wild state, called in Chili Guanico, but generally believed to be the original of the Peruvian llama, alpaca, or vicuña. The latter name is sometimes applied as the generic term of the race, and the other two names those of varieties, differing no more than varieties of sheep, the Alpacas being considerably smaller than the others and more woolly; some of the variety called llamas are as tall as good sized yearling bovines.

In a wild state, the guanicos inhabit the chain of mountains from Tierra del Fuego to the Cordilleras in Peru, choosing their pasture ground just below the snow line. In a domestic state, the llamas are used as beasts of burden, in mountain or plain, in cold and heat, often traversing snowy altitudes and tropical valleys upon the same journey. They are much used in the Andes, by the miners, to bring down ore and carry up supplies; travelling twelve or fifteen miles a day with loads of 100 lbs. each, and living upon the coarsest and most scanty supply of herbage, and, like the camel, enduring days of toil without water. It is possible the llama, as well as the camel, may yet be used to advantage by travellers upon our great American deserts. It is stated in the history of Peru that troops of llamas, a thousand in number, used to be common, all bearing their loads, and travelling under the guidance of a few men over regions where no other beast could obtain a footing.

"One of the herd offered for sale on Saturday was exhibited loaded with packs, as he would be upon a journey. All of them, even a lamb of a few months old, are broken to the halter, and are very docile and tractable. Their countenances exhibit marked expressions of intelligence—the eyes are very bright and sight keen. The colour is generally that of brown or black sheep—some of them pretty nearly jet black. Some of the males are grey, or nearly white, with white faces. The shape of the head, face, ears and neck is like that of a native sheep, except the neck is more elongated. The cloven hoofs are larger and the legs longer than the tallest sheep, and the bodies though longer do not appear much larger than some of the tall varieties of sheep. The anatomy is curious in this, that the thigh seems to proceed from the hip joint with but little connection with the body.

"The fleece is from four to six inches long, fine and soft within, with coarse hairs thinly scattered through it and projecting beyond the mass. It very much resembles the fleece of a black sheep. We should judge the average weight of fleeces might be about ten pounds—the bellies being generally bare—and the value is greater than that of wool. The excellence and durability of alpaca cloth are generally known."

The report went on to say that the sale was not successful, the biddings never reaching the reserved price of 100 dollars each animal. He (Mr. Gee) subsequently bought the animals, and took them by the steamer, *City of New York*, to Glasgow, where they arrived shortly before the agricultural show in that city. He exhibited them at a charge of sixpence each, and had as many as 1,200 visitors. He afterwards brought them to Birmingham, at the time of the Queen's State visit, and although there

were about a million of people congregated on that occasion, not more than twenty-eight persons honoured his alpacas with a visit. The people seemed to have no idea what the animals were. Then he brought them to London in the hot weather of June. He sold three to Mr. Pattison, two to Miss Coutts, and ten to Mr. G. A. Lloyd, the latter at £25 each, which paid him very well; but they afterwards sold for £60 each. Mr. E. Wilson, the well-known editor of the *Melbourne Argus*, took the remainder of the flock for £700, which was at the rate of £23 per head. During the time the flock was in his possession, they grazed at Acton, about five miles from London, and they got quite fat. They started for Australia in high mettle, and, like most other emigrants, they did even better there. With regard to the acclimatisation of these animals, it could only be proved by time. In the case of the angora goat, which was introduced into Australia some years ago, a very beautiful fleece was produced when they got the real thing itself, but even amongst the goats brought from Turkey there was a white streak which spoiled its appearance, and the only doubt was, that the skins would run "kempy," and that in the course of a few generations the fleece would become as coarse as the hair of the common goat. He did not, however, think that would be the case with the alpaca, although the fleece had not the oiliness of the merino sheep, and from the nature of the food in Australia, he believed the wool would be improved in texture. With regard to the suitability of the climate there, and the supply of proper food for these animals, there could be no doubt. They might walk for hundreds of miles up to their knees in grass, which was excellent food, and the animals would eat it when it was in a dry state. At the time he bought his flock in New York, he was wholly ignorant of what was the proper food for them; but during the passage he fed them with Indian maize which they readily ate, as also hay, and they were in better condition after 13 days sea passage than when they were put on board. There was one point which he felt some delicacy in touching upon. He was glad to hear from Mr. Macarthur that Mr. Ledger was likely to reap some reward for his exertions; but with regard to himself, he was somewhat in the position of the Irish ostler who, when a gentleman was about to drive off without having handed him the customary gratuity, called after him, "Please yer honour, if my master asks me what you gave the ostler, what am I to tell him?" and if any one asked him what he had got, his reply would be—nothing.

Mr. DAVIS would be sorry to divert the discussion from the congratulatory tone which had characterised it, for it appeared they were a "Mutual Congratulation Society" that evening. One thing they might certainly congratulate themselves upon—that was upon the perseverance and energy which had pre-eminently distinguished our countryman, Mr. Ledger, in this matter. All who had taken any interest in affairs in Australia and South America, must be aware that the difficulties, dangers, and privations which Mr. Ledger had gone through, were such as few men would have the courage to undergo, even with the prospect of success in view. Yet whilst he tendered to Mr. Ledger the full measure of gratitude for what he had done, he could not look upon this matter from the *coulleur de rose* point of view in which some regarded it. If they looked at the locality in which these animals originated—they lived in extremely mountainous regions, almost within the reach of perpetual snow. The vicuna lived in the highest regions of all. In Australia, they heard of snowy ranges, but those were mountains which were covered with snow only during certain portions of the year. Snow did not exist there over any great extent of country for any great length of time, and in such localities as it most existed, the country was rather barren and rocky. It was true these animals could live upon hard fare, but they could not live upon mere rocks. The snowy mountains of Australia were, to a great extent, of a rocky nature, and the quantity of grass was small.

They had been told of the country explored by Mr. Stuart, but it should at the same time have been stated that it was a country of intense heat, and these were not animals to stand great heat, but were rather adapted for cold climates. No doubt they would live up to their bellies in snow, but he for one did not look forward with the hope that some did to the propagation of this animal in Australia. He would rather point to this subject as affording to enterprising young men in this country an opening to make their fortunes, by going to Peru and Bolivia and promoting the growth of wool there from the animal in its native climate. It might be said that South America was a badly governed country, but there were Englishmen making money there very fast. He quite approved of the course which had now been taken by the government of Australia. They were now disposed to do what they should have done in the first instance. They might now say to Mr. Ledger, "By your energy and perseverance you have proved yourself a benefactor to your country; here is the amount you have spent; take back your animals; increase and prosper. If you succeed, this country must benefit thereby, but in any case, it is no use for the government to turn sheep farmers." As to introducing these animals into England, he thought it would be unwise. At present they had animals which produced both wool and mutton, and to bring into a country like this, animals which produced fleeces only, would never answer. He was not afraid of this being attempted, for the very best reason with Englishmen—that it would not pay. They wanted an animal which gave them both clothes and food, and this they had in the sheep, from the Scotch sheep, which dwelt in the snows of the North, to the South Down, which flourished in the mildest climate and on the driest lands. He could not sit down without expressing his deep obligation to Mr. Charles Ledger for what he had done, and all that he had contemplated doing for Australia. He regarded him as a great benefactor to that country if he did not succeed, but if he succeeded he would be an enormous benefactor both to Australia and his fellow-countrymen at home.

Dr. CRISP believed that there was an error as to the date at which these animals were first introduced into Europe. He understood it to be stated in the paper that it was not until the year 1815 that the llama was first introduced, but he believed it would be found that specimens of these animals were brought to the Jardin des Plantes, in Paris, as early as 1808. He begged to add his meed of praise to Mr. Ledger for the exertions he had made in this matter, and to the gentleman who had so ably brought this interesting subject before them.

The CHAIRMAN, in closing the discussion, thought the meeting would agree with him that, if there was one paper more than another which was particularly within the province of the Society, it was the one they had just heard. The subject of how to improve the cultivation and increase the production of so important a staple as wool, was one well worthy of their most attentive consideration. There was nothing in the paper of a speculative character. They had a collection of facts and details upon an important subject which might be turned to good account, if not at the present moment, certainly at some future time. It was their duty, as a Society, to give every encouragement to gentlemen who came before them with such valuable information as Mr. Ledger had collected—not in the ordinary sense of the term, but received directly from his brother, who had devoted so many years of his life to the promotion of this object. His friend on the left (Mr. Davis), had characterised the meeting as one of mutual congratulation. He (the Chairman) thought it was justly so. At the same time, his friend had advanced opinions somewhat at variance with those expressed in the paper. That was one true object of discussion. They did not ask gentlemen to approve of everything that was said. They always invited discussion upon what was advanced in the paper, and the greater the variety of opinion that was elicited

the more valuable the meetings of the Society became. They had heard a very remarkable fact that evening, which showed how important a part the commerce of this country played in the industry of the world. Englishmen, in the first instance, had been the means of introducing the animal spoken of from South America into Australia, and then they afforded the best market to which the commodity produced could be sent. That was a noteworthy instance of the influence of British commerce all over the world. He was sure they would all feel indebted to the gentleman who had brought such a collection of facts before them in so clear a manner as had been done that evening, and that they would cordially concur in a vote of thanks to Mr. Ledger for his paper.

The vote of thanks having been passed,

Mr. LEDGER, in reply on the discussion, said he had studiously avoided introducing into this subject matters of a purely personal or pecuniary character; he had not spoken of the dangers and difficulties his brother had undergone more than was essential to the proper elucidation of the subject, but as remuneration had been alluded to, he fully concurred in the hope that his brother would ultimately reap a large reward for the accomplishment of his enterprise. This depended entirely, however, upon the success of the animals. He had heard (not from his brother), that at Copiapo, £42,000 had been offered for the flock for the French Government, and declined. He thought the New South Wales Government had acted with forethought and generosity in giving his brother £15,000, every farthing of which, however, had been remitted to South America, to liquidate liabilities incurred in the prosecution of the enterprise, leaving a balance still due of £1,080, and he was happy to say his brother had concluded an arrangement with the Colonial Government, which was waiting the sanction of the legislature, to pay him cash £2,000, and £3,000, in annual payments of £500 for six years, to provide him pasture grounds free of rent or taxes for 12 years; at the expiration of which the animals were to be his property on payment of the principal of £20,000 without interest. The produce of wool in the 12 years to be his, but he was not to be permitted to sell any of the animals without the consent of the Colonial Government.

The paper was illustrated by a collection of alpaca skins, contributed by Mr. Murrietta; vicuña skins, by Mr. Skinner Row; specimens of alpaca wool, by Mr. Gee; of llama wool, by Miss Burdett Coutts; and pieces of alpaca fabric by Messrs. Edwards. Coloured diagrams of all the various animals, by Mr. H. D. Bell, were on the walls. To all these persons the thanks of the Society are due.

The Secretary announced that on Wednesday evening next, the 27th inst, a paper "On the Hudson's Bay Territories, their Trade, Productions, and Resources," by Mr. A. K. Isbister, would be read.

EXTRACTS FROM THE REPORTS OF H.B.M. CONSULS.

(Continued from page 198.)

HONDURAS.—The republic of Honduras exhibits every species of variety in point of physical construction and aspect of its territory, abounding in ranges and clusters of lofty mountains, elevated table lands, densely wooded valleys of rich alluvial soil, watered by many large streams, taking their rise at the base of the principal chain of Cordilleras, which traverse the country from east to west, and flowing into the two oceans; and the whole affording as

great a diversity of soil, climate, and vegetation as can be found in any other region of the world of equal or greater limits. The department of Comayagua owes its importance to the capital of the State being comprised in it. It lies in the very centre of Honduras, and is very rich in minerals; but at present very few mines are worked within its limits. The population is 50,000 inhabitants, the greater part of whom are concentrated in the large valley of the same name; the soil is very fertile, but agriculture is at a very low ebb. Its products are maize, wheat, sugar-cane, plantains, beans, and a few other vegetables. Such is the improvidence and indolence of the people that, notwithstanding the adaptability of the soil for cultivating the above and many other products, sufficient for sustaining many times the present number of people, they very seldom raise sufficient products to last till harvest time in the ensuing year, and consequently a degree of scarcity, amounting almost to a famine, is generally experienced between April and August, when the crops are reaped. The scarcity of this year is unprecedented, owing to the war which raged during the last, which effectually stopped all agriculture; the maize, the principal article of food, and which in ordinary times is sold at three dollars the fanega, is now commanding prices ranging from 30 to 36 dollars. The number of people who are devoted to agriculture and farming in this department does not exceed 5,000; the other avocations of life are those of the trader, shopkeeper, and artisan, while by far the greatest part of the inhabitants have no recognised way of supporting themselves, and their necessities indeed are so few, that little is needed to satisfy them. The same observation is, in fact, applicable to the whole State. The city of Comayagua has a population of about 6,000 inhabitants. It contained about 18,000 in the year 1827, when it was taken, pillaged, and a portion of it set fire to by the troops of Guatemala, and has never been able to recover from the effects of this disaster. The department comprehends 14 districts, 33 villages, and 9 hamlets. The department of Tequagalpa, situated on the east of Comayagua is, perhaps, the richest section as regards mineral substances, and by far the greatest part of the silver exported from Honduras is raised in the mines of this department. Its capital, which bears the same name, is the most populous and prosperous town in the state, containing upwards of 10,000 inhabitants. It stands on the right bank of the river Choluteca, and is connected with the small Indian village of Comayaguela by a handsome stone and mortar bridge of 9 arches. It has 6 churches, an incipient university, and the mint for the copper or provisional money. The department comprises 13 districts, 19 villages, and 11 hamlets, with a population of 55,000 souls. The department of Gracias lies between that of Comayagua and the Republic of Guatemala. Its population is the largest in the state, numbering at least 65,000 souls, and with the exception of Olanchó, is the wealthiest department. The inhabitants are more industrious and in better circumstances than in the other divisions. A great number of them employ themselves in growing tobacco, which is the staple commodity of the department. Indigo is also cultivated here, although as yet to a small extent. All the opals exported from Honduras are extracted from the mines of Gracias, where some very rich silver ores are also to be found. There are two towns, the one is Gracias, the capital, and the other Santa Rosa, each having a population of about 3,000 inhabitants. There are 11 districts, 40 villages, and 21 hamlets.

Olanchó is more a pastoral than an agricultural department, and contains extensive savannas of excellent pasture ground, on which graze innumerable herds of horned cattle, which constitute the principal wealth of the inhabitants. The people being scattered in *haciendas*, or large cattle farms, the number of villages and hamlets, which amount in all to 14, is very small relatively to the population, numbering about 52,000 inhabitants. The capital, Juticalpa, is reckoned to be only second to Tequagalpa, in point of population, and is supposed to contain

8,000 souls. There is another town called Danli, which has about 4,000 people; the number of districts is 9.

Olancho has some very rich mines, some of them of gold, but this metal chiefly occurs in the beds of the rivers, all of which carry gold of the purest quality in their sand; yet, strange as it may appear, very few of the inhabitants employ themselves in gold washing, their chief occupation being that of breeding and tending cattle. This department is the wealthiest of Honduras, and some of the largest capitals in Central America are to be found here, a circumstance attributable to the comparative quiet which has been enjoyed from the greater distance to the centres of strife and commotion. But while the inhabitants have advanced materially in wealth, they have remained stationary in a moral and intellectual point of view, and nowhere is education in such a backward state as here.

Choluteca is situated on the southern part of Honduras, fronting the Bay of Fonseca, and consequently the islands situated in this bay fall under its jurisdiction. The population does not exceed 20,000 inhabitants, of which the town of Nacaome may contain 5,000, and that of Choluteca, the capital, some 2,000. The former town is the most important one in the department, and as regards commerce, Nacaome is one of the first places in the state, from its proximity (two or three miles) to the port of La Brea, where most of the goods that come *via* the Pacific are landed. The chief wealth of the inhabitants consists, at present, of cattle; but there are several rich silver mines, only two or three of which, however, are now being worked. Besides the two above-named towns, it has the port of Amapala, with 1,000 inhabitants, and in all 7 districts, 6 villages, and 5 hamlets.

Santa Barbara is situated on the north of Comayagua, and is traversed by the rivers Chamelicon, Blanco, Santiago, and Ullua. It is in the valleys of these rivers that the mahogany "cortes" or cuttings are established. Santa Barbara abounds in rich woodlands, producing all the precious woods which grow between the tropics; a portion of the inhabitants consequently are devoted to mahogany felling; but still cattle constitutes, as in Blanco, the chief source of wealth. The Indians collect sarsaparilla, vanilla, dye-woods, skins, and gums, which they exchange for European manufactured articles of small value. The department contains 7 districts, 22 villages, and 3 hamlets, with a population of 42,000 souls, of which 2,000 belong to the town of Santa Barbara, the capital, and about 3,000 to that of Omoa, the principal port of Honduras.

The department of Yoro, while it is the largest in territory, is the least peopled, and the number of inhabitants does not exceed 18,000. It abounds in mahogany to a greater extent than any other part of the state, and by far the greatest number of cuttings are established here. There are also large cattle haciendas, and herds, which enter largely into the composition of its wealth and resources. As in Santa Barbara, the Indians employ themselves in collecting sarsaparilla, skins, vanilla, and gums, for the same purposes of exchange. The capital is Yoro, and has about 2,000 people. The department comprises 14 districts, the port of Truxillo, 6 villages, and 2 hamlets.

Home Correspondence.

NON-ACTION OF SOFTENED CHALK SPRING-WATER UPON LEAD.

SIR,—Observing a renewal, on the occasion of the paper on the present condition of the water supply of London, of the often repeated, but never truly made statement, that softened chalk spring-water acts upon lead in consequence of the water being softened, I beg leave to say, that in repeated trials of chalk spring-waters, softened and

unsoftened, I never once found this to be the case. It may suffice to state generally the result of the last considerable investigation on this point that I had occasion to make, which was on chalk spring-waters in the neighbourhood of Maidstone. I exposed a gallon of the several waters to 50 square inches of scraped bright lead for a week. Such circumstances of exposure would produce much more action than what would occur in the practice of water supply. I found that the action of the softened water, when the spring had been kept free from contamination, lay between one 400th and one 800th of a grain per gallon; in one case, where previous contamination was traced, the action was one 200th of a grain. These inconsiderable and perfectly harmless amounts of action I found to be between 4 and 6 per cent. of the action of the same waters previous to their being softened.

I am, &c.,

THOS. CLARK, M.D.,

Late Professor of Chemistry in Marischal College and University, Aberdeen.

19th February, 1861.

UNIFORM WEIGHTS AND MEASURES.

SIR,—I shall be obliged by the insertion in your *Journal* of the following short statement from the German newspapers. It shows the progress of the metric system in Germany, and contains some suggestions which may be useful in the extension of the same system among us.

I am, &c.,

JAMES YATES.

Highgate, Feb 14, 1861.

COMMISSION FOR ESTABLISHING UNIFORM MEASURES AND WEIGHTS IN GERMANY.

The following is extracted from the *Neue Frankfurter Zeitung* for January 25th:—

This Commission has recently made a great advance towards the attainment of its object, all the more essential determinations having been adopted with perfect unanimity. Not only is the metre to be taken as the unit of linear measure, but that well-known name is to be retained in preference to the German monosyllable *stab*, meaning staff, which had been recommended in a memoir published under the authority of the Hanoverian Government.

The fundamental decimal division of the metre into ten decimetres, 100 centimetres, and 1,000 millimetres, will receive some modifications, which seem judicious, and adapted to be useful. The decimetre is considered to be of less practical importance than the centimetre or the millimetre. It is therefore proposed that, passing by the decimetre, the centimetre should be called—in the affairs of common life—*cent*, and the millimetre—*mil*. It is expected that both the long and the abbreviated names will be learnt by all who are well instructed in the matter, although the short names will be commonly used by working people.

Besides this division into centimetres, or mills, a binary division will be admitted for cloth-measure. As the German ell is divided into its half, quarter, eighth, and sixteenth, the metre will be divided in the same way, not merely in compliance with long-established habit, but because these divisions are convenient in the case of articles which admit of being doubled several times. These binary divisions will be marked on one side of the scale, and the lowest of them will be a little longer than the English nail.

The double metre will be the fathom, to be used by mariners, and is, indeed, already so used in Saxony.

For itinerary measure it is proposed to use the kilometre, a rod of five metres, and a mile of 7,500, which would not differ materially from the common German mile.

Taking the square metre as the unit of superficial measure, the following will come into use:—

The square rod	... equal to	25 square metres.
The are	... ..	100 "
The acre (morgen)...	... ..	2,500 "
The yoke	... ..	5,000 "
The hectare	... ..	10,000 "

It is intended that the different German States should select from these measures, and use any of them (more or less) accord-

ing as they may be best suited to the previous habits of various districts. All of them conform to the metric system.

Lastly, the cubic metre is to be the unit for solids, with adjustments for measuring fire-wood, timber, masons and bricklayers' work, road materials, engineering, &c.

This proposal is to be laid before the Diet, at Frankfort, for adoption, in May next.

N.B.—The weights of the metric system are in use throughout Germany already.

VENTILATION OF MINES.

SIR,—The importance of the subject is a sufficient excuse for my asking the favour of a place in your columns for the following suggestions on the ventilation of coal mines.

Scarcely a week but we have accounts of some dreadful explosion in one of these mines, and then the usual formalities are gone through and the matter is forgotten. We pity the men; we raise subscriptions for the widows and children; and this, month after month.

Let it be admitted that the obtaining of coal is a dangerous employment, it still becomes a duty to make it as little dangerous as possible.

Some years ago I went down a mine, for the purpose of seeing the mode of working the coal, and found the system of ventilation to be that usually known. The air was rarefied by a large fire under one shaft and, rising, its place was supplied by fresh air, which, descending the other, and carried by brattices and partitions through the whole mine, at last reached this, the up-cast shaft.

Nothing can be better for all general purposes of ventilation than this system if well carried out; sufficient air is supplied to enable the workmen to breathe and to remove, in a very diluted state, any small portions of escaped gas that may be in the working; but suppose a fiery place in the seam to be discovered, it then becomes necessary to use the "Davy" lamp, as the miners call it, for the air and gas are in explosive proportions, and the least accident to this lamp may fire the mine.

Now the usual remedy in a case of this kind is but increased ventilation, to secure such a dilution as to render the mixture non-explosive. That this is a failure, let the reports in our daily papers witness.

The question remains—is there any better and safer means of preventing the mischief arising from the accumulation and issue of gas? I think there is.

The gas either "oozes" or "blows"—"oozes" from the small crevices, or "blows" with considerable force from the larger; but whether it "oozes" or "blows" it invariably ascends, though mixing with the air as it rises in proportions, greater or less, according to the force of its issue, it still must ascend, and hence the most explosive mixture is almost always at the ceiling of the working, along which it spreads, growing more and more diluted at every foot of its course. The plan I have to propose is one that takes advantage of this difference of specific gravity between the air and the gas. I propose a system of gas drainage for the mine. Let a pipe of sufficient diameter be carried down the up-cast shaft, with branches of diminished calibre (fastened to the roof) carried to all parts of the workings likely to produce gas. Let an upward current be created in this pipe, by means of a revolving fan, of sufficient force to cause a thorough draft through the whole series of branches; let the ends of the pipes in the various stalls or places where the workmen labour, be fitted with a flattened cone, the mouth of which should touch the roof of the stall; in addition let there be a simple valve arrangement, for shutting off the inward current in the event of its not being required for the safety of that particular place. It is evident that in this system we have the elements of perfect safety; the ordinary issue of gas is taken from the mine immediately on its appearance, while in the event of a pick discovering "a blower" the conical cap might be placed so near it by

the addition of another foot or two of tube, that that also could be carried out in the same way.

The very minor question of what to do with the mixed gas and air that issues through the fan is safely left to others; whether to distribute it through the air by a high chimney, or use it as a means of heating the boilers of the engine driving the fan, are questions of the spot; but the main question—that of removing the gas as rapidly and effectually as possible, as soon as given out—would, I think, be answered by the adoption of this plan. If this be true, it follows that, at the cost of a few hundred pounds, every mine in the kingdom might be rendered safe, without the slightest interference with its present arrangements for ventilation or carrying.

If it be not true—if the plan be false in theory and impossible of practice, I shall at least have the consolation of feeling that it has reduced the space in which the true theory and practice are to be found, and has thus—though false in itself—aided the discovery of truth where a true theory and an efficient practice are matters of life and death to thousands.—I am, &c.

A. STEWART HARRISON.

133, Upper Thames-street, E.C.

EXHIBITION OF 1862.

SIR,—The remarks of Mr. Hanbury, published in your *Journal* some short time since, on the arrangement and general care of the drug collection which will probably figure at the forthcoming Exhibition of 1862, are equally applicable to other collections. To any one acquainted with those of 1851 and 1855, the deficiencies must be notoriously apparent. For instance, the large collection of woods of 1851 would have been greatly enhanced in value had they been properly named, or, (considering the difficulty of identifying species in remote countries) still better, had specimens of the leaves and flowers accompanied each section. It would then have been easy to determine to which family the plant belonged, and whether, judging from its affinities, it was likely to prove valuable. This could be easily done by numbering the wood and specimen to correspond, the former with a brand or an indelible paint. Very many fine sections of wood that were exhibited in the Exhibition of 1851, which must have cost great labour and trouble to procure, were quite valueless for want of information as to the species producing them, and in many cases their country; some having no other mark than an unintelligible sign, resembling some complicated trade mark, or in other cases a confusion of figures. The same jumble was observed in many other collections besides woods. Resins, gums, medicinal substances, and dye stuffs, all helped, at the close of the Exhibition, to swell the list of the unknown. Some of this was no doubt due to the displacement of labels, numbers, &c., as sometimes on referring to the number of an object in the list or catalogue belonging to it, the description attached to that particular number is evidently intended for something else, not at all agreeing with the object you are in search of, clearly indicating that the mistake was in the numbering. Now this might be obviated in a great measure, if the specimens are dry, and contained in bottles or jars, by placing inside a label or number, corresponding with one on the outside, so that if the outside one got lost or misplaced, there would still be one to identify it with in the list. Again, if the specimens are preserved in acid or spirits, a number might be attached inside, stamped in some metal which the liquid would not act upon. Great care should be taken to keep all specimens free from insects or damp. Woods might be effectually protected by washing with turpentine or corrosive sublimate, and some camphor might be packed up with all the dried specimens.

It is to be hoped that our contributors abroad will take a timely hint in placing the resources of their country in the most favourable light, so that they may receive the attention they merit, while at the same time they may prove beneficial to science and art in this country, and

encourage communication with countries as yet but little known in our commercial circles.

I am, &c.,
JOHN R. JACKSON, CURATOR.
Royal Gardens, Kew, W., February 19, 1861.

To Correspondents.

ERRATUM.—In last number of *Journal*, page 202, col. 2, line 37, for "nominal," read "normal."

MEETINGS FOR THE ENSUING WEEK.

- MON. ...Royal Geographical, Burlington House, 8½.
Actuaries, 7.
Medical, 8½.
- TUES. ...Inst. of Civil Engineers, 8.
Medical and Chirurgical, 8½.
Zoological, 9.
- WED. ...Archæological Assoc., 8½.
R. S. Literature, 4½.
Society of Arts, 8. Mr. A. K. Isbister, "On the Hudson's Bay Territories; their Trade, Productions, and Resources."
- THURS. ...Institution of Naval Architects, 12. 1. Mr. J. D'A. Samuda, "On the Construction of Iron Vessels of War, iron cased." 2. Mr. J. Scott Russell, "On the Professional Problem presented to Naval Architects in the Construction of Iron-cased Vessels." 3. Mr. Charles Lungley, "On the new Mode of Constructing Shot-proof Vessels of War." Evening Meeting, 7. "Discussion on Iron-cased Vessels of War."
Royal, 8½.
Antiquaries, 8½.
Philological, 8.
Royal Society Club, 6.
- FRI.Institution of Naval Architects, 12. 1. Rev. J. Woolley, "On the Rolling of Ships." 2. Mr. S. Read, "On a Method of Calculating the Hydrostatic Stability of Ships." 3. Mr. F. K. Barnes, "On a new Method of Calculating the Stability of Ships." 4. Mr. J. Scott Russell, "Notice of the late Mr. John Wood, and of Mr. Charles Wood, Naval Architects." Evening Meeting, 7. 1. Mr. F. J. O. Evans, R.N., "On the Deviation of the Compass in Iron and other Vessels, considered practically with reference to Material, Position, and Mode of Construction and Equipment." 2. Mr. Norman S. Russell, "On American River Steamers." Archæological, 4.
Royal Inst., 3.
- SAT.Institution of Naval Architects, 12. 1. Mr. J. Scott Russell, "On the Wave Line Principle of Ship Construction." Part III. Conclusion. 2. Mr. J. Grantham, "On the Classification of Iron Ships." 3. Mr. Charles Lungley, "On the Construction of Unsinkable Iron Ships." Medical and Chirurgical, 8½.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.
Delivered during the Vacation, 1860.

- Par.
Num.
562. Sailors' Homes—Abstract of Return.
574. East India (Claims upon Oudh)—Return.
- 84 (7). Trade and Navigation Accounts (31 July, 1860.)
504. South Kensington Museum—Report from Committee.
553. The Bell (New Palace, Westminster)—Copy of Reports.
540. Burials—Returns.
577. National Gallery (Captain Fowkes' Plan for Alteration)—Return.
564. Audit of Accounts (Exchequer)—Return.
586. East India (Civil Engineers' Examinations)—Returns.
578. Statute Book—Return.
579. East India (Bombay Light Cavalry)—Return.
512. Poor Removal—Return.
573. East India (Imports)—Return.
580. Unclaimed Dividends, &c. (Ireland)—Return.
590. Ribbons—Return.
494. Thames Embankment—Report and Evidence.
- 383 (A 3). Poor Rates and Pauperism—Return (A).
682. Naval Prize Money, &c.—Account.
575. Redundant List (Public Departments)—Abstract of Returns.
603. East India (Army)—Return.
480. Transport Service—Report and Evidence.
- 236 (2). Elections (Ireland)—Return of the Total Cost in 1857 and 1859.
440. Civil Service Appointments—Report and Evidence.
556. Metropolitan Board of Works—Account of Receipt and Expenditure.
556. do. do. —Report.

569. Colonial Governors, &c.—Return.
572. Inhabited House Duty, &c.—Returns.
576. Westminster Bridge, &c.—Return.
580. Poor Law Board (Payment of Debts)—Return.
604. East India (Guaranteed Companies)—Return.
607. Fines and Penalties (Ireland)—Abstract of Accounts.
612. East India (Bombay)—Copies of Letters.
614. Mr. Drought—Report, &c.
615. Turnpike Trusts—Return.
618. Superior Courts of Law (Fee Fund)—Statement.
545. Navy (Gun and Mortar Boats)—Report and Evidence.
- 84 (8). Trade and Navigation Accounts (31st August, 1860).
205. Country Treasurers—Abstract of Accounts.
- 383 (A 4). Poor Rates and Pauperism—Return (A).
525. Friendly Societies—Report of the Registrar.
564. Queen's Colleges (Ireland)—Return.
581. Poor Rate Assessments—Return.
586. Standing Orders of the House of Commons.
605. East India (Income and Licence Bills)—Return.
641. Navy and Army—Detailed Accounts of Receipts and Expenditure.
544. Breakwaters and Harbours—Lords' Report.
587. Woods and Forests—Return.
613. Archdeacons—Return.
421. Woods, Forests, &c.—38th Report of the Commissioners.
609. China—Return.
530. Merchant Shipping—Report and Evidence.
- 84 (9). Trade and Navigation Accounts (30th Sept. 1860).
611. Army (Berrington and Spiller's Knapsacks)—Copies of the Reports.
565. Railways—Return.
610. Surveys—Return.
- 383 (A 5). Poor Rates and Pauperism—Return (A).
599. Imperial Guarantees—Return.
520. Irremovable Poor—Report and Evidence.
593. Newspapers, &c.—Return.
568. Quarantine—Abstract of Regulations in force in Foreign Countries.
- 568 (1). Quarantine—Returns obtained by the Board of Trade.
589. Intoxicating Liquors (Scotland)—Return.
- 512 (1). Poor Removal—Return.
- 383 (B). Poor Rates and Pauperism—Return (B).
- 84 (10). Trade and Navigation Accounts (31 Oct. 1860.)
608. Army (Staff Officers)—Return.
- 441 (1). Military Organisations—Index to the Report.
- 540 (1). British Museum—Index to the Report.
584. Savings Banks—Return.
561. Spirits, &c.—Returns.
594. Post Office (Scotland)—Return.
- 383 (A 6). Poor Rates and Pauperism—Return (A).
691. Poor Law—Return.
- 84 (11). Trade and Navigation Accounts (30 Nov. 1860.)
- 483 (1). Miscellaneous Expenditure—Index to the Report.
596. Natal—Return.
608. Emigration (North American Colonies)—Return.
- 383 (A 7). Poor Rates and Pauperism—Return (A).
616. Jamaica (The Vere Case)—Return.
600. St. Lucia—Return.
597. Electric Telegraph Companies—Return.
- 383 (C). Poor Rates and Pauperism—Return (C).
- 431 (1). Packet and Telegraph Contracts—Index to the Reports.
- 504 (1). South Kensington Museum—Index to Report.
- 383 (A 8). Poor Rates and Pauperism—Return (A).

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, February 15th, 1861.]

Dated 15th October, 1860.

2514. P. R. Smith, Essex-street, Strand—Imp. in fire-arms and ordnance, and in the projectiles to be used therewith.

Dated 11th December, 1860.

3037. J. Hamerton, Shibden, near Halifax, Yorkshire—Imp. in manufacturing certain textile fabrics, known as "zebra cloth" or triple cloth.

Dated 12th December, 1860.

3051. G. S. Sharwood, Bradford—Improved machinery for drying, stretching, and tentering woollen or other cloths. (A com.)

Dated 17th December, 1860.

3093. J. W. Hill, 3, Philadelphia-place, Hackney-road, Middlesex—Imp. in sewing machines and the use thereof.

Dated 5th January, 1861.

36. W. M. Williams, Handsworth, Staffordshire—An imp. or imps. in treating coal and other bituminous minerals and peat, for the purpose of obtaining solid and liquid hydro-carbons therefrom.

Dated 15th January, 1861.

112. C. Stevens, 31, Charing-cross—A new paste made from wood to be used in the manufacture of various articles, together with the apparatus employed in the preparation of the same. (A com.)

Dated 19th January, 1861.

154. D. Mann, Rochester, New York—Imp. in rotary spading and digging machines.

Dated 24th January, 1861.

198. J. Vero, Atherstone, Warwickshire—Imp. in machinery for separating the fur or hair from the skins of animals.

Dated 25th January, 1861.

203. J. Law, Hollinwood, Lancashire—Imp. in shutting off the steam and operating upon the breaks of engines employed in lowering into and lifting from mines or pits.
204. B. Lauth, Pittsburgh, Pennsylvania, U.S.—Imp. in piling iron for heating, preparatory to re-rolling or hammering the same.

Dated 28th January, 1861.

218. J. Boulby, Whitby, Yorkshire—An improved log or instrument for measuring the speed of ships and the velocity of streams of water.
220. J. Badcock, Canhall-gate, Wanstead, Essex—Imp. in signalling between the different carriages of railway trains and other engines.
222. F. H. Twilley and A. Romer, Dean-street, Middlesex—Imp. in tobacco-pouches, purses, and other such like receptacles.
224. W. E. Newton, 66, Chancery-lane—Improved apparatus for exhausting and compressing air, and producing air blasts. (A com.)
226. W. E. Newton, 66, Chancery-lane—Imp. in railway carriage wheels. (A com.)
228. J. A. Shipton, Wolverhampton—Imp. in steam engines.

Dated 29th January, 1861.

234. J. W. Friend, Freemantle, Southampton—Imp. in beer engines
238. E. A. L. Negretti and J. W. Zambra, Hatton-garden—Imp. in mountain and other barometers.

Dated 30th January, 1861.

240. A. Courtois, and J. E. de Soulange, Paris—An improved construction of kiln for calcinating limestone, gypsum, or other similar substances.
242. J. Mellor, jun., Colne-cottages, Kings-bridge, Huddersfield—An improved machine called a "Cross raising gig," used in the dressing of woollen cloth.
244. A. Boyle, Birmingham—Imp. in the manufacture of umbrellas and parasols.
246. F. Smith, Carlisle-street, Middlesex—An imp. in the manufacture of swivel rings especially applicable to swivels and watch keys.
248. G. T. Bousfield, Loughborough-park, Brixton—Imp. in the manufacture of lasts for boots and shoes. (A com.)
250. G. T. Bousfield, Loughborough-park, Brixton—Imp. in the manufacture of boots and shoes. (A com.)
252. J. H. Johnson, 47, Lincoln's inn-fields—Imp. in the treatment of vegetable substances, and in the preparation of beverages therefrom. (A com.)
254. R. B. Longridge, Manchester—Imp. in promoting the circulation of water in steam boilers, and in supplying water to steam boilers.

Dated 31st January, 1861.

256. C. Reeves, Birmingham—A new or improved instrument or apparatus for converting breech-loading small arms into muzzle-loading small arms, and an imp. or imps. in cartridges for breech-loading arms.
257. R. D. Clegg, 73, Fleet-street—Imp. in timekeepers, called "Atmospheric clocks, or mercurial timekeepers."
258. J. Robertson, Avon Bank, Lanark, N.B.—Imp. in machinery or apparatus for finishing textile fabrics.
259. J. H. Johnson, 47, Lincoln's inn-fields—Imp. in machinery or apparatus for roasting coffee and other seeds and roots, and for drying grain. (A com.)
260. S. Moulton, Bradford—Imp. in the construction of cables for telegraphic purposes.
261. S. W. Warren, Brooklyn, New York—An improved high and low water indicator for steam and other boilers.
263. J. Chatterton, Highbury, Middlesex—Imp. in treating gutta serena, india rubber, and compounds containing one or both of these substances, and in machinery and apparatus employed therein.

Dated 1st February, 1861.

267. H. Curtiss, 7a, Skinner-street, Snow-hill—Imp. in men's scarfs, cravats, and neck-ties.
269. A. Crichton, Cork—Imp. in applying and fitting screw propellers, and in forming and fitting the stern parts of ships for receiving screws.
271. J. J. de Arrietta, Piccadilly—Certain applications of chapapote and its products, and of the same combined with other substances, and of materials treated therewith, to various purposes in manufactures and the useful arts.

272. A. V. Newton, 68, Chancery lane—An improved construction of motive power engine. (A com.)

273. H. Medlock, 20, Great Marlborough-street, Westminster—Imp. in brewing malt liquors.

274. M. Pollok, jun., Govan, Lanark, N.B.—Imp. in machinery or apparatus for winding yarn or thread.

275. H. Bessemer, Queen-street-place, New Cannon-street—Imp. in the manufacture of malleable iron and steel, and in the manufacture and apparatus employed in such manufacture.

276. T. E. Knightley, 25, Cannon-street—Imp. in constructing stable floors.

Dated 2nd February, 1861.

277. G. H. Spencer and R. G. Cook, Hathersage, Derbyshire—Imp. in umbrella and parasol furniture, and in the means or apparatus employed in treating umbrella and parasol furniture, parts of which are also applicable in heating steel wire ribs, rods, or tubes for other purposes.

278. E. T. Hughes, 123, Chancery-lane—Imp. in the manufacture of woven fabrics, and in the machinery employed therein. (A com.)

279. W. Prangley, Salisbury—Imp. in pianofortes.

280. J. Cameron, Hindpool, Lancashire—Imp. in purifying water for the supply of steam boiler and other uses.

281. A. L. Bricknell, Loughborough-park, Brixton—Imp. in fire escapes.

282. W. Clark, 53, Chancery-lane—Imp. in the manufacture of paper pulp. (A com.)

283. W. Clark, 53, Chancery-lane—Imp. in bellows. (A com.)

285. W. N. Wilson, 144, High Holborn, and W. T. Rowlett, Leicester—Imp. in sewing machines and in apparatus connected therewith.

286. J. G. Marshall, Headingley, Leeds—Imp. in the treatment of flax, hemp, and other fibres in various stages of preparation and manufacture.

Dated 4th February, 1861.

289. J. Abraham, Birmingham—An imp. or imps. in brass nails to be used in sheathing ships, and for other purposes.

290. A. F. C. de Balyon, Paris, 57, Faubourg Montmartre—Imp. in the manufacture of woven fabrics.

291. R. Howarth, Mount Pleasant, Bury, New-road, Manchester—Imp. in machinery for raising pile on woollen, cotton, and other fabrics.

292. E. C. Morgan, Norwich—Imp. in carriage building.

293. R. A. Brooman, 166, Fleet street—Imp. in carving or figuring wood. (A com.)

294. J. Murray, Whitehall-place—Imp. in railway carriages.

PATENTS SEALED.

[From Gazette, February 15th, 1861.]

February 15th.

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|---------------------------------|---------------------|
| 2038. A. Halter and F. Decorce. | 2059. W. Clark. |
| 2043. F. P. J. V. den Ouwelant. | 2311. J. H. Wells. |
| 2044. W. Clark. | 2331. R. Geoghegan. |

[From Gazette, February 19th, 1861.]

February 19th.

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| 1892. J. Hunter. | 2123. W. H. Muntz. |
| 2014. C. E. Wilson and H. G. Hacker. | 2136. H. Potter. |
| 2018. R. West. | 2156. A. Lester. |
| 2026. R. J. Cole. | 2171. E. Weiskopf. |
| 2028. S. Purchas. | 2192. M. A. F. Mennons. |
| 2030. Sir J. S. Lillie. | 2218. F. A. Calvert. |
| 2034. R. R. Benley. | 2276. F. A. Calvert. |
| 2035. W. E. Gedge. | 2308. W. E. Newton. |
| 2039. S. Greenwood. | 2450. G. W. Reynolds and E. Dance. |
| 2945. J. J. Révy. | 2488. T. Wilson. |
| 2058. M. A. F. Mennons. | 3007. J. H. Cary. |
| 2117. W. Johnston and W. Ross. | 3017. D. Annan. |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, February 15th, 1861.]

February 11th.

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| 259. C. Johnson & G. Johnson. | 276. J. E. Ryfel. |
| 274. J. Macintosh. | 301. G. Baker and J. E. Baker. |

[From Gazette, February 19th, 1861.]

February 14th.

291. J. Garnett.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[From Gazette, February 15th, 1861.]

February 13th.

393. E. Loysell.

[From Gazette, February 19th, 1861.]

February 16th.

431. J. Boydell.